APPENDIX ‘C’

DFO

Stantec

Memo

To:	Bill Krawchuk 500-311 Portage Avenue, Winnipeg	From:	Angele Watrin Prodaehl 500-311 Portage Avenue, Winnipeg
File:	113733340-401	Date:	June 19, 2019

Reference: Dublin Avenue Bridge Replacement over Omand's Creek Self-Assessment

The Federal *Fisheries Act* requires that project activities in or near water that are part of or support a commercial, recreational, or Aboriginal (CRA) fishery avoid causing serious harm to fish unless authorized by the Minister of Fisheries and Oceans Canada (Government of Canada 2016). Fisheries and Oceans Canada (DFO) has developed assessment criteria (DFO, 2016a), Pathways of Effects (POEs; DFO 2014) and Measures to Avoid Causing Harm to Fish and Fish Habitat Including Aquatic Species at Risk (DFO 2016b), to aid in the assessment of the potential for projects to cause serious harm to fish and/or result in prohibited effects under *Species at Risk Act* (SARA). If a project, or specific project-related activities, cannot avoid serious harm to fish, or is likely to contravene one of the SARA prohibitions with respect to aquatic species, and is not included in either of the criteria listed on DFO's Projects Near Water website, it is recommended to submit a request for review or application for Authorization under the *Fisheries Act* to DFO. This memorandum documents the assessment completed for the City of Winnipeg's proposed new bridge crossings over Omand's Creek (the "Site").

This assessment was completed to determine the potential for project-related activities to cause serious harm to fish. The assessment is based on the information available from the detailed design report (Stantec, 2019) and proposed construction plans. A field fish habitat assessment was also conducted for this assessment. Changes to the proposed works or work plan may result in the need for updates or revisions to this assessment.

Existing Conditions

The Site is in the City of Winnipeg, Manitoba, where Dublin Avenue crosses Omand's Creek. Lands within the Project Area have been previously modified by development, infrastructure and drainage enhancements. The sediment at the Site is impacted with metals and polyaromatic hydrocarbons from nearby industry. However, some naturalized areas occur along the creek, such as undeveloped lots north of Dublin Avenue, and south of Dublin Avenue at Bluestem Nature Park and Omand Park. These naturalized areas provide refuge and habitat for birds, fish, mammals and invertebrates within a highly altered urban landscape.

Fish and Fish Habitat

A field assessment to characterize fish habitat at the Site was completed on August 8, 2018 (Appendix A). A desktop review of species present and connectivity was also conducted.

The approximate channel width upstream of the proposed bridge replacement is approximately 4.0 m, and downstream the channel width is approximately 10.0 m. The Site has gentle-sloped banks (5-15 degrees) with the exception of a few areas upstream of the bridge, on the outsides of creek bends, where the bank slopes are 40-90 degrees. The banks are composed primarily of organic and fine-sized material and both upstream and downstream banks were stable. At the time of the visit, the instream vegetation and floating algae were abundant in slower portions of the creek. The riparian area consisted predominantly of willow, cattails and thistle, with grasses and shrubs also present. Omand's Creek water depths ranged from 0.1 m to 0.8 m, with substrate composition consisting predominantly of fines with lesser amounts of coarser material

present such as cobble, small gravel, and a few boulders. The banks were covered with riprap downstream of the bridge Project. Omand's Creek supports spring and summer spawning fish from the Assiniboine River as well as moderate to good rearing habitat for fish. Migration habitat quality would depend on water levels and time of year. Omand's Creek in the vicinity of the site is expected to freeze to the bottom during the winter. Overwintering of fish likely occurs downstream in the Assiniboine River.

Previous surveys in Omand's Creek have identified northern pike (*Esox lucius*) *white* sucker (*Catostomus commersoni*), brook stickleback (*Culaea inconstans*), and fathead minnow (*Pimephales promelas*) (Penner, 2006). None of the aquatic species identified in the reviewed literature are listed by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC), under the *Species at Risk Act* (Government of Canada 2017), or by the Manitoba Conservation Data Centre (Government of Manitoba 2018).

Description of Works

The proposed in-water work will occur outside the Restricted Activity Timing Windows for southern Manitoba (April 1 – June 30) to avoid potential spring and summer spawning. The proposed works will remove the existing bridge and install a new single-span concrete slab bridge. The outer bridge spans will be 5.5 m long and the central channel span will be 8.0 m wide, for a total bridge length of 19.0 m. The instream work associated with the bridge replacement will be completed in winter under frozen conditions from January to March 2020.

Methods and equipment to be used in this project include:

1. Removal of the existing bridge will be completed during winter; as such there will not be open water. The superstructure will be cut into pieces employing wire cutting. Cranes or excavators, positioned at the edge of the bank of the creek, may be used to remove the superstructure.

2. The pile caps will be removed by cutting them free from the piles as required and using the cranes or excavators to lift them away. The piles will be removed by excavators. To accomplish this the machine will have to be beside the pile, likely within the creek, but will work off the ice. If the piles break during removal, the piles will be removed to a minimum of 1 m below the proposed finished grade.

3. Bridge and pile debris from demolition will be removed and placed on the ice and cleaned up prior to the melt.

4. Ice will be removed from the stream channel prior to the removal of impacted soil.

5. If free flowing water is present, the construction area will be isolated using a coffer dam and water will be pumped out and re-routed around the construction area.

6. Impacted soil will be excavated and removed from 4,406 m^2 of creek bed, regrading down 0.3 m using an excavator from the embankments, adjacent roadway or parking lot. Geotextile liner and riprap will subsequently be placed over excavated area underneath the bridge and 33 m north and 13 m south of the bridge.

7. The stream bed will be reconstructed with new clean fill and regraded and rechanneled to tie in with the existing stream channel upstream and downstream of the bridge.

8. Steel H-piles for the bridge deck slab will be driven in from each approach roadway using a pile-driving crane. Stream bed material will be excavated from around the pile installation area, away from the water course, prior to the piles being installed. The successful contractor will select final construction methodology and will work within the constraints of the environmental approvals and restrictions.

9. Steel H-piles for the bridge deck slab will either be installed from the existing road prior to excavation or will be installed from the side embankments. If the piles are installed from the side embankments, silt fencing will be installed by the contractor to prevent sediment from entering the stream. The successful contractor will select final construction methodology and will work within the constraints of the environmental approvals and restrictions.

10. Sheet pile shoring will be installed at the southeast corner of the bridge starting from the end of the wingwall and extending along the creek behind the existing building.

11. New slope protection in the form of Class 350 riprap will be installed in front of, and around, the abutments and wingwalls. The channel and embankment in front of the piles will be graded and shaped to allow for the placement of rock riprap. Riprap slope protection will be placed 33 m upstream and 13 m downstream, beyond the current footprint of the bridge. A 20.0 m x 10.6 m bridge deck slab with backwall and wingwalls will be cast in place. The Contractor will ensure the backwall and wingwalls are complete prior to April 2020 so as not to affect the spring fish spawning period.

Pathway of Effects

DFO has developed assessment criteria (DFO 2016a) and *Measures to Avoid Causing Harm to Fish and Fish Habitat Including Aquatic Species at Risk* (DFO 2016b) to aid in the assessment of the potential for activities to cause serious harm to fish or prohibited effects under SARA. The proposed works include excavation of the stream channel bed; therefore, they will not meet the criteria under the "Project activities and criteria where DFO review is not required" (DFO 2016a). The proposed works were therefore evaluated using DFO's PoEs (DFO, 2014) to assess the potential project-related effects. This approach:

- identifies the relevant PoEs for the proposed works;
- prescribes site-specific measures and mitigation to "break" the PoE; and
- evaluates whether the proposed works have the potential to result in serious harm to fish or prohibited effects under SARA.

A complete list of applicable PoEs, and their corresponding avoidance and/or mitigation measures are summarized in Table 1 below. In-water work will not be permitted between April 1 and June 30 to comply with DFO's recommended timing windows to avoid the sensitive spring and summer spawning period in southern Manitoba (DFO 2013).

Reference: **Dublin Avenue Bridge Replacement over Omand's Creek Self-Assessment**

Table 1 Dublin Avenue Proposed Bridge Replacement over Omand's Creek – Aquatics Effects Assessment using Pathways of Effects

Pathway of Effect	Applicability	Potential Effects/ Stressors	Mitigation Measures	Residual Effects
Vegetation Clearing				
Changes in bank stability and exposed soils	Embankment clearing and grading	• Increased erosion and sedimentation in the watercourse • Alteration of fish habitat	• Best practices will be followed to minimize the footprint and encourage recolonization of the shoreline by adjacent vegetation	None – stream banks will be stabilized
Increased erosion potential	Embankment clearing and grading	• Increased bank erosion and sedimentation in the watercourse	• Access will be minimized on banks and riparian areas • Erosion-control blankets and silt fencing will be used during open water conditions • Reseeding will occur on any non-armoured embankments that are disturbed during construction • Grading material from the banks will kept off the ice on Omand's Creek to the extent possible	Negligible
Excavation and Grading				
Changes to erosion potential and sediment loading	Embankment clearing, removal activities, and grading	• Increased bank erosion and sedimentation in the watercourse	• Silt curtains will be installed downstream of the Site to mitigate sedimentation during removal and installation activities as required if there is flow in the channel or during periods of melt. • Silt fences will be installed for the duration of construction and will allow for fish passage as required for site conditions if there is flow in the channel or during periods of melt. • Stockpile excavated material outside of the high-water mark and away from the stream bank	Negligible
Changes to slope stability	Embankment clearing, removal	• Increased bank erosion and sedimentation in the watercourse	• Revegetation of non-armoured disturbed soils above the high water mark will be conducted to limit the potential for increased erosion and	None – stream banks will be stabilized

Reference: **Dublin Avenue Bridge Replacement over Omand's Creek Self-Assessment**

Table 1 Dublin Avenue Proposed Bridge Replacement over Omand's Creek – Aquatics Effects Assessment using Pathways of Effects

Pathway of Effect	Applicability	Potential Effects/ Stressors	Mitigation Measures	Residual Effects
	activities, and grading		sedimentation of exposed soils, slopes will be stabilized with riprap and regrading will be undertaken as required	
Release of contaminants into water course	Removal of contaminated soil	• Disturbance and in-stream release of contaminated soil could contaminate water causing harm to fish and fish habitat	• Although the creek is expected to be frozen to the bottom at the time of construction, if flowing water is present at the time of construction then coffer dams will be constructed to isolate work areas on both sides of the stream channel bed. Any potential flow in the creek at the time will be redirected around the work area.	Positive, the removal of contaminated soil will reduce future release of metals and polyaromatic hydrocarbons to the waterbody.
Use of Industrial Equipment				
Release of contaminants into water course	During all phases of construction	• Oil, gas, or fuel leaks could contaminate water causing serious harm to fish and fish habitat	• All work will take place from the embankments; no equipment shall enter the watercourse, with the exception of one machine, working from the ice, to pull the existing piles from the stream bed. • Develop a Spills Management Plan; an emergency spill kit should be on site • Management of equipment: operate (including refueling), store, and maintain all equipment and associated materials in a manner that prevents the entry of any deleterious substance to the waterbody. Any part of the equipment entering the waterbody or operating on the bank shall be free of fluid leaks and externally cleaned/degreased • Contaminated soils will be removed and stockpiled well above the high-water mark until transported off site. • Work to place in winter when flow is minimal and ice cover is expected to be present.	None

Reference: **Dublin Avenue Bridge Replacement over Omand's Creek Self-Assessment**

Table 1 Dublin Avenue Proposed Bridge Replacement over Omand's Creek – Aquatics Effects Assessment using Pathways of Effects

Pathway of Effect	Applicability	Potential Effects/ Stressors	Mitigation Measures	Residual Effects
Changes to erosion potential and sediment loading	During all phases of construction	• Increased soil exposure and erosion • Increased sedimentation in the watercourse	• Minimize access to the water course and banks to protect riparian vegetation and minimize bank erosion • Stabilizing and rehabilitating affected areas • Erosion-control blankets and silt fencing should be used where applicable.	None
Placement of Material or Structures in Water				
Changes to habitat structure and cover	Placement of riprap and piers	• Change of substrate • Change in stream hydraulics, resulting in changes to: – Sediment concentrations – Substrate composition – Food supply • Habitat structure and cover	• All work will take place from the embankments; no equipment shall enter the watercourse • Work will limit the footprint of the area affected to that only in direct proximity to the proposed works • Sedimentation and erosion control measures will be implemented. • Work to be completed in winter when little/no flow is expected in the creek.	Negligible, the footprint of riprap material will extend beyond the footprint of the existing bridge structure, and the overhanging vegetation on the banks will be replaced with riprap
Changes to habitat structure and cover	Remediation of impacted soil	• Change of substrate • Habitat structure and cover	• All work will take place from the embankments; no equipment shall enter the watercourse • Sedimentation and erosion control measures will be implemented. • The impacted soil will be replaced with clean fill, geotextile, and clean Class 350 riprap	Negligible, the footprint of new material (replacement fill) will extend beyond the footprint of the existing bridge structure and the stream bed will be regraded.

Determination of Effects on Fish and Fish Habitat

The existing bridge is in need of replacement, and removal of the contaminated soil from the Site is necessary. Following the implementation of avoidance and mitigation measures outlined in Table 1, the potential residual effects to fish and fish habitat conditions in Omand's Creek are expected to be negligible. The proposed single span bridge crossing will not negatively affect water flow and fish passage at the Site. All work is to be completed in the dry or isolation and under winter frozen ground conditions. Timing windows to avoid sensitive spawning periods will be adhered to and the avoidance and mitigation measures outlined in Table 1 will be implemented. As such, the project activities are unlikely to result to serious harm to fish that are part of, or support, a CRA fishery.

Closure

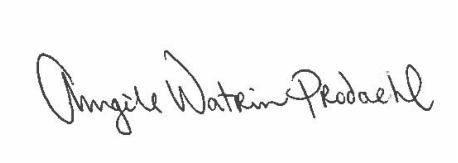
The results of the assessment indicate that the proposed works are unlikely to result in serious harm to fish that are part of, or support, a CRA fishery, or contravene the prohibitions in SARA for aquatic species. However, a request for review by DFO is recommended, due to the extent of soil remediation and regrading that is required below the waterline. This assessment assumes the project design is as described in the accompanying documents and reports as available at the time of this assessment. It also assumes that the mitigation measures described in the project reports will be implemented and are effective.

Stantec is not responsible for serious harm that may result from changes to project plans after the completion of the assessment. Deviation from the project plans by contractors or others is not the responsibility of Stantec and is not covered in the assessment.

If the Project design or implementation changes at any time prior to construction, a new assessment should be completed for the applicable components to determine if the changes result in the need for DFO review or approval.

Stantec Consulting Ltd.

Prepared by:



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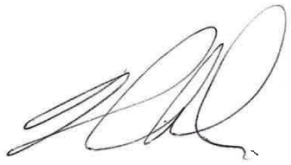

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Attachment: Appendix A – Habitat Assessment

References

Fisheries and Oceans Canada (DFO). 2013. Projects near Water. Manitoba Restricted Activity Timing Windows for the Protection of Fish and Fish Habitat. Available at: http://www.dfo-mpo.gc.ca/pnw-ppe/timing-periodes/mb-eng.html. <Accessed November 2018>

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Stantec Consulting Ltd. 2019. City of Winnipeg Replacement of the Dublin Avenue Bridge over Omand's Creek and Associated Regional Street Improvements. Prepared for City of Winnipeg. 46 pp.

Dublin Ave. Bridge Replacement

Omand Creek

UTM Location:	14 V 629578 5530340	**Survey Date:**	August 8, 2018
Legal Location:		**Management Area:**	Southern MB
Crew Initials:	JL, AWP	**Restricted Activity Period:**	April 1- June 15

Physical Channel Transect Data

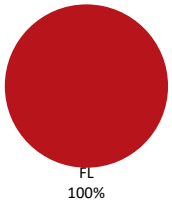
Transect # (Location)	**1 (↑100)**	**2 (↑50)**	**3 (CL)**	**4 (↓100)**	**5 (↓200)**	**6 (↓300)**
Channel Width (m)	4.2	3.9	4.5	10	10	11
Wetted Width (m)	4.2	3.9	4.5	10	10	11
Depth at LDB + 25% (m)	0.45	0.30	0.10	0.55	0.55	0.60
Depth at LDB + 50% (m)	0.55	0.30	0.10	0.65	0.60	0.70
Depth at LDB + 75% (m)	0.55	0.25	0.10	0.65	0.45	0.60
Max. Depth (m)	0.60	0.25	0.20	0.70	0.80	0.75
Gradient (%)	<1	<1	<1	<1	<1	<1
Dominant Habitat Unit	FL	FL	FL	FL	FL	FL
Stream Bed						
Substrate (% of Transect Area): Organics						
Fines	50	100	60	75	50	75
Small Gravel	50		10			
Large Gravel			10			
Cobble			10	25	45	25
Boulder			10		5	
Bedrock						
Embeddedness						

Bank Measurements	**Left**	**Right**	**Left**	**Right**	**Left**	**Right**	**Left**	**Right**	**Left**	**Right**	**Left**	**Right**
Bank Height (m)	0.30		0.50		1.5		0.30		0.40		0.30	
Bank Slope (°)	10	40	80	90	15	10	10	5	10	10	10	10
Bank Stability	S	S	S	S	S	S	S	S	S	S	S	S
Dom. Bank Material	F	F	F	F	BL	BL	F	C	F	C	F	C
Subdom. Bank Material	O	O	O	O	F	F	LG	O	SG	O	LG	O
Dom. Riparian Veg.	W	W	G	S	G	G	S	S	S	S	S	S
Subdom. Riparian Veg.	S	S	N	N	N	N	N	N	N	N	N	N

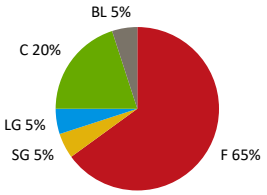
Habitat Inventory / Reach Data

Instream Cover (%):	75	Overhead Cover (%):	20
Dom. Instream Cover:	AV	Dom. Overhead Cover:	GF
Subdom. Instream Cover:	-	Subdom. Overhead Cover:	-
Maximum Depth (m)	0.8	Dom. Aquatic Veg. Type:	EM

Habitat Distribution



Substrate Composition



Water Quality Data

Time of Day (HH:MM):	NA
Water Temperature (°C):	NA
Dissolved Oxygen (mg/L):	NA
Sp. Conductivity (µs/cm):	NA
pH:	NA
Turbidity (NTU):	NA

Channel Characteristics

Pattern:	ST
Islands:	N
Bars:	N
Coupling:	PC
Confinement:	OC
Flow Stage:	LOW

Fish Habitat Assessment Ratings

	Forage	**Coarse**	**Sportfish**
Spawning:	Good	Good	Good
Overwintering:	None-Poor	None-Poor	None-Poor
Rearing:	Good	Poor-Moderate	Poor-Moderate
Migration:	Poor-Moderate	Poor-Moderate	Poor-Moderate

Photo 1: Facing upstream at Omand Creek, upstream of bridge

Photo 2: Facing upstream at Omand Creek, downstream of bridge

Fish Sampling Data

Method	**Effort**	
No Electrofishing	0	(s)
No Trapping	0.0	(hr)

Electrofisher Settings

Volts	Freq. (Hz)	Duty Cycle (%)	Dist. (m)

Species	**Efish Catch** (n)	**Trap Catch** (n)	**Efish CPUE** (#fish/100s)	**Trap CPUE** (#fish/hr)	**Rel. Abundance** (% of total)
NO FISH CAPTURED					-
NO FISH CAPTURED					

General Comments

The crossing on Omand Creek is located ~4 km upstream from the confluence to the Assiniboine River. This creek provides good habitat for spawning and rearing. Water levels were as low as 0.1 m in some places indicating that Omand Creek has the potential to dry up over the summer. Low water levels coupled with low flow indicates the creek may freeze to the bottom in winter. Overwintering likely occurs in the Assiniboine River. Migration is only limited by water levels. YOY fish and invertebrates observed throughout assessment area.

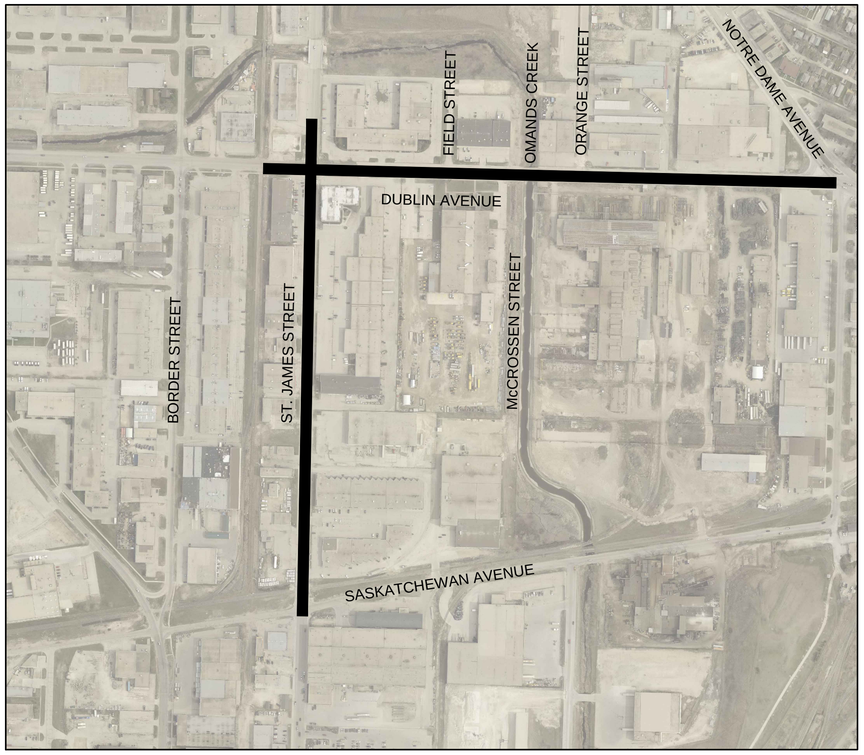
Prepared by: Reviewed by:

Winnipeg

THE CITY OF WINNIPEG

PUBLIC WORKS DEPARTMENT
ENGINEERING DIVISION

REPLACEMENT OF THE DUBLIN AVENUE BRIDGE OVER OMAND'S CREEK AND ASSOCIATED REGIONAL STREET IMPROVEMENTS



ISSUED FOR TENDER

RELEASED FOR CONSTRUCTION BY:

CAM WARD, P.ENG. DATE

Stantec
500 - 311 Portage Avenue, Winnipeg MB
www.stantec.com

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DESIGN DATA

DESIGN SPECIFICAITONS

1. CANADIAN HIGHWAY BRIDGE DESIGN CODE (CHBDC) CAN/CSA-S6-14

LIVE LOADING

1. CAN/CSA-S6-14 CL-625 AND LANE LOAD
2. PEDESTRIAN LOAD IN ACCORDANCE WITH CAN/CSA S6-14
3. OVERLOADS:
   a. 21,960 kg TANDEM AXLE SPACING 1.0m
   b. 24,000 kg TANDEM AXLE SPACING 1.0m
   c. 27,500 kg TANDEM AXLE SPACING 1.5m

STRUCTURAL CONCRETE

1.	CAST-IN-PLACE DECK	35 MPa C-1 WITH SYNTHETIC FIBRE
2.	CAST-IN-PLACE CULVERT	35 MPa C-1
3.	SUBSTRUCTURE	35 MPa C-1
4.	APPROACH SLABS	35 MPa

WORKING BASE

1. 20 MPa S-1

REINFORCING STEEL

1. CONCRETE COVER SHALL BE 75mm UNLESS NOTED OTHERWISE.
2. DECK, AND TOP SLAB OF CULVERT.
   a. ASTM A955M, 300 SERIES, MINIMUM GRADE 420
3. ALL OTHER REINFORCEMENT.
   a. CAN/CSA.G30.18-09, GRADE 400W

ANCHOR RODS

1. ASTM 4193 GRADE B8M.

PILES

1. HP310x110 PILES SHALL CONFORM TO CAN/CSA G40.21 GRADE 350W.

LIST OF ABBREVIATIONS

@	AT	HORIZ	HORIZONTAL
ALT	ALTERNATING	IB	IRON BAR
ALUM	ALUMINUM	IF	INSIDE FACE
APPROX	APPROXIMATE	LG	LONG
AVE	AVE.	MK	MARK
B	BOLTS	MAX	MAXIMUM
BC	BEGIN CURVE	m	METRE
BM	BENCHMARK	MIN	MINIMUM
BC	BY OTHERS	mm	MILLIMETRE
B/O	BOTTOM OF	NTS	NOT TO SCALE
BOT	BOTTOM	No	NUMBER
B/W	BOTH WAYS	OF	OUTSIDE FACE
BRG	BEARING	O/C	ON CENTRE
CIP	CAST-IN-PLACE	O/O	OUTSIDE TO OUTSIDE
CJ	CONSTRUCTION JOINT	OPH	OPPOSITE HAND
CP	CONTROL POINT	PL	PLATE
CWB	CANADIAN WELDING BUREAU	PM	PRIMARY MEMBER
℄	CENTRE LINE	QTY	QUANTITY
C/W	COMPLETE WITH	R	RADIUS
CONC	CONCRETE	R.O.W.	RIGHT OF WAY
CONT	CONTINUOUS	REINF	REINFORCEMENT
CL	CLEAR	SHT	SHEET
DBL	DOUBLE	SP	SPACING
Ø	DIAMETER	SS	STAINLESS STEEL
DTL	DETAIL	STD	ST&ARD
DWG	DRAWING	STR	STRAIGHT
EA	EACH	SU.	SUBSTRUCTURE UNIT
EC	END CURVE	SYM	SYMMETICAL
EE	EACH END	T&B	TOP & BOTTOM
EF	EACH FACE	THK	THICK
EC	EACH WAY	TPG	THROUGH PLATE GIRDER
EQ	EQUAL	TYP	TYPICAL
EQ SP	EQUAL SPACE	T/O	TOP OF
EL	ELEVATION	UNO	UNLESS NOTED OTHERWISE
EXST	EXISTING	U/S	UNDERSIDE
FCM	FRACTURE CRITICAL MEMBER	VERT	VERTICAL
FF	FAR FACE	WM	WATERMAIN
FG	FINISHED GRADE	WP	WORKING POINT
GALV	GALVANIZING	W/	WITH
G	GIRDER		
GRAN	GRANULAR		

SECTION & DETAILS

A SECTION NUMBER OR DETAIL LETTER

B DRAWING WHERE SECTION OR DETAIL IS TAKEN

C DRAWING WHERE SECTION OR DETAIL IS DRAWN

LOCATION APPROVED
UNDERGROUND STRUCTURES

SUPV. U/G STRUCTURES COMMITTEE — DATE

NOTE:
LOCATION OF UNDERGROUND STRUCTURES AS SHOWN ARE BASED ON THE BEST INFORMATION AVAILABLE BUT NO GUARANTEE IS GIVEN THAT ALL EXISTING UTILITIES ARE SHOWN OR THAT THE GIVEN LOCATIONS ARE EXACT. CONFIRMATION OF EXISTENCE AND EXACT LOCATION OF ALL SERVICES MUST BE OBTAINED FROM THE INDIVIDUAL UTILITIES BEFORE PROCEEDING WITH CONSTRUCTION.

B.M.
ELEV.

NO.	REVISIONS	DATE	BY
0	ISSUED FOR TENDER	19.05.03	M.J.B.

Stantec
500 - 311 Portage Avenue, Winnipeg MB Canada
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DESIGNED BY	K.S.A.	CHECKED BY	K.S.A.
DRAWN BY	J.M.B.	APPROVED BY	
HOR. SCALE: VERTICAL:	1:50 OR AS NOTED	RELEASED FOR CONSTRUCTION:	
DATE	2019.05.03	DATE	

ENGINEER'S SEAL

CONSULTANT DRAWING NO.
G-002

Winnipeg
THE CITY OF WINNIPEG
PUBLIC WORKS DEPARTMENT
ENGINEERING DIVISION

DUBLIN AVENUE BRIDGE REPLACEMENT
DRAWING INDEX & DESIGN DATA

SHEET 2 OF 46
CAD FILE DRAWING NUMBER 33340g-001-926.dwg
CITY DRAWING NUMBER P-3503-2

U:\133233401\0300_drawing\0302_sheet_files\02_civil\33340g-001-926.dwg
2019/06/03 3:00 PM By: Hart, Jake

TH18-01 TESTHOLE RECORD

CLIENT City of Winnipeg | PROJECT No. 113733340
PROJECT Dublin Avenue Bridge Replacement | DATUM Geodetic | NORTHING 5530309.014
LOCATION Dublin Avenue at Omand's Creek | ELEVATION 233.883 m | EASTING 629555.137
DRILLING DATE August 3, 2018 | DRILLING CO. Paddock Drilling Ltd. | DRILLING METHOD 125 mm SSA

DEPTH (m)	SOIL TYPE	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	MOISTURE CONTENT (%)
0	TP	Brown to black TOPSOIL (TP) - with rootlets, some sand			
	FL	FILL: brown clay with sand, with gravel, with silt	GS	19	
1	CH	Stiff black to grey fat CLAY (CH) - with to some silt	GS	31	
2	ML	Very soft tan SILT (ML) - with fine grained sand, trace clay, trace gravel - trace gravel at 1.8 m	GS	22	
		Particle Size Analysis Results from SPT @ 2.3 m: - 0% Gravel, 7% Sand, 79% Silt, 14% Clay	GS	35	
3		Stiff brown to grey fat CLAY (CH) - trace to some silt, trace sand - mottled brown and grey below 3.0 m - 2 mm silt seam at 3.7 m.			
4		Particle Size Analysis Results @ 3.8 m: - 0.2% Gravel, 0.5% Sand, 9.7% Silt, 89.6% Clay - firm below 4.4 m - trace silt inclusions at 4.6 m	GS	57	
5					
			GS	61	
6		- trace oxidation below 5.8 m - grey below 6.1 m			
7	CH	Particle Size Analysis Results @ 6.9 m: - 0% Gravel, 0.9% Sand, 21.5% Silt, 77.6% Clay - soft below 7.0 m	GS	59	
8					
9		- some silt inclusions at 8.4 m	GS	50	

Sample Type: GS - Grab Sample SS - Split Spoon RC - Rock Core ST - Shelby Tube PT - Piston Tube VT - Shear Vane Test
Piezometer Backfill Type: Bentonite, Drill Cuttings, Sand, Slough
Logged by: Ivanna Montani
Reviewed by: Rhett Bonham
Stantec

TH18-01 TESTHOLE RECORD cont'd

CLIENT City of Winnipeg | PROJECT No. 113733340
PROJECT Dublin Avenue Bridge Replacement | DATUM Geodetic | NORTHING 5530309.014
LOCATION Dublin Avenue at Omand's Creek | ELEVATION 233.883 m | EASTING 629555.137
DRILLING DATE August 3, 2018 | DRILLING CO. Paddock Drilling Ltd. | DRILLING METHOD 125 mm SSA

DEPTH (m)	SOIL TYPE	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	MOISTURE CONTENT (%)
10		- trace gravel at 9.9 m	GS	58	
11			GS	55	
12	SM	Loose grey SILTY SAND (SM) - fine grained sand	GS	22	
	SW	Loose tan to brown SAND (SW) - medium to coarse grained sand, occasional cobbles, trace large gravel	SS	20	
13					
14		- compact below 13.7 m - no sample recovery below 14.0 m	SS	22	
15	TL	Inferred silt TILL (TL) - frequent cobbles encountered during drilling below 14.6 m			
16		End of Testhole • Auger refusal at a depth of 15.4 m on suspected dense till. • Moderate groundwater seepage was observed at a depth of 11.6 m. • Groundwater level was observed at a depth of 8.5 m upon completion of drilling. • Soil sloughing was observed in the sand layer at a depth of 12.2 m. • Testhole backfilled with auger cuttings and bentonite chips. • Vibrating wire piezometer ID 100D1800939 installed with tip at Elev. 224.97 m immediately adjacent to testhole TH18-01.			
17					
18					

Sample Type: GS - Grab Sample SS - Split Spoon RC - Rock Core ST - Shelby Tube PT - Piston Tube VT - Shear Vane Test
Piezometer Backfill Type: Bentonite, Drill Cuttings, Sand, Slough
Logged by: Ivanna Montani
Reviewed by: Rhett Bonham
Stantec

TH18-02 TESTHOLE RECORD

CLIENT City of Winnipeg | PROJECT No. 113733340
PROJECT Dublin Avenue Bridge Replacement | DATUM Geodetic | NORTHING 5530351.932
LOCATION Dublin Avenue at Omand's Creek | ELEVATION 232.105 m | EASTING 629569.771
DRILLING DATE August 3, 2018 | DRILLING CO. Paddock Drilling Ltd. | DRILLING METHOD 125 mm SSA

DEPTH (m)	SOIL TYPE	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	MOISTURE CONTENT (%)
0	TP	Black TOPSOIL (TP) - with rootlets, some sand			
	CH	Firm grey fat CLAY (CH) - with to some silt, with to some sand, trace rootlets	GS	40	
1	ML	Soft tan SILT (ML) - some fine grained sand, trace clay, trace gravel	GS	23	
2		Stiff brown to grey fat CLAY (CH) - trace to some silt, trace silt inclusions, trace sand - firm, mottled grey to brown below 1.5 m - trace oxidation below 2.3 m	GS	61	
			GS	54	
3		Particle Size Analysis Results @ 2.7 m: - 0% Gravel, 0.9% Sand, 10.1% Silt, 89.0% Clay - soft, grey below 3.4 m	GS	55	
4			GS	62	
			GS	63	
5					
6	CH	- soft to firm at 6.6 m			
7			GS	59	
8		- trace gravel, increasing sand content below 7.6 m			
9		Particle Size Analysis Results @ 8.4 m: - 0.2% Gravel, 8.2% Sand, 27.5% Silt, 64.1% Clay	GS	52	

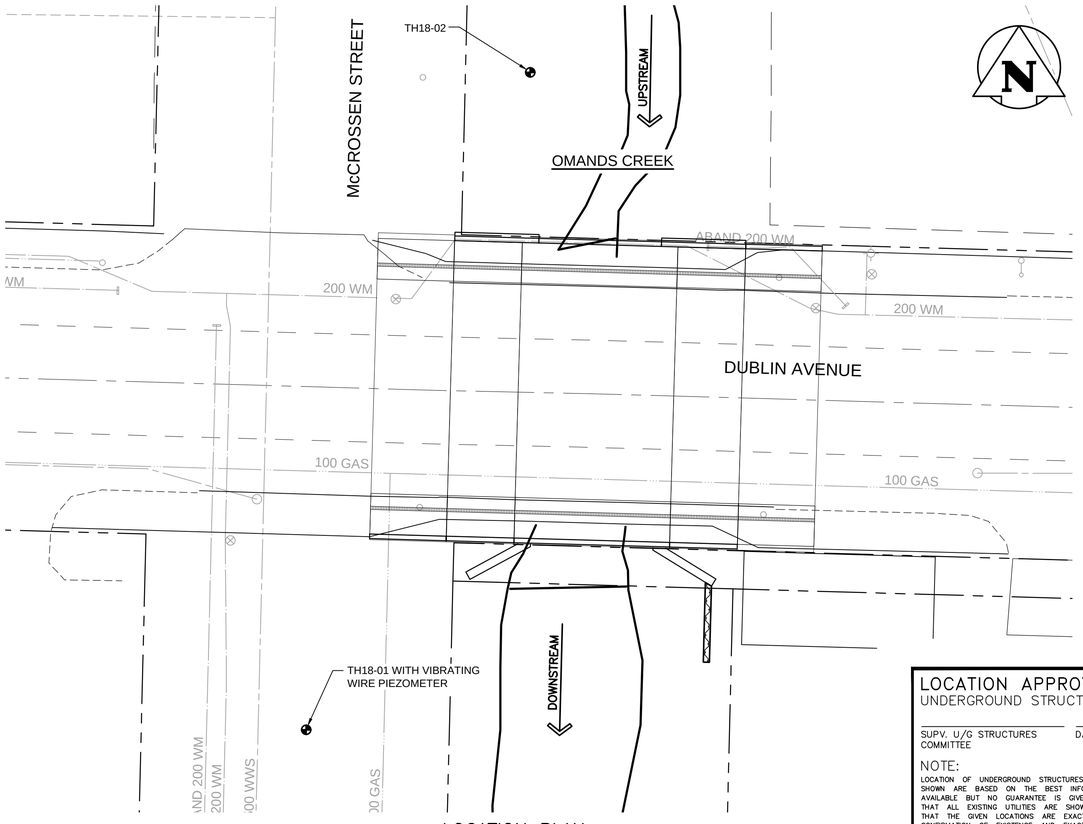
Sample Type: GS - Grab Sample SS - Split Spoon RC - Rock Core ST - Shelby Tube PT - Piston Tube VT - Shear Vane Test
Piezometer Backfill Type: Bentonite, Drill Cuttings, Sand, Slough
Logged by: Ivanna Montani
Reviewed by: Rhett Bonham
Stantec

TH18-02 TESTHOLE RECORD cont'd

CLIENT City of Winnipeg | PROJECT No. 113733340
PROJECT Dublin Avenue Bridge Replacement | DATUM Geodetic | NORTHING 5530351.932
LOCATION Dublin Avenue at Omand's Creek | ELEVATION 232.105 m | EASTING 629569.771
DRILLING DATE August 3, 2018 | DRILLING CO. Paddock Drilling Ltd. | DRILLING METHOD 125 mm SSA

DEPTH (m)	SOIL TYPE	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	MOISTURE CONTENT (%)
		- very soft below 8.8 m - increasing silt below 9.1 m			
10			GS	53	
11		- intermixed silt till with clay below 10.7 m			
		- frequent silt inclusions below 11.3 m	GS	44	
12		Loose grey SILT TILL (TL) - with to some clay, with sand, some gravel	GS	30	
13	TL	- compact below 12.8 m	SS	15	
14		- very dense below 13.4 m	SS	26	
15		End of Testhole • Auger refusal at a depth of 14.0 m on suspected dense till. • Moderate to heavy groundwater seepage was observed at a depth of 12.2 m. • Groundwater level was observed at a depth of 8.2 m. • No soil sloughing was observed during or upon completion of drilling. • Testhole backfilled with auger cuttings and bentonite chips.			
16					
17					
18					

Sample Type: GS - Grab Sample SS - Split Spoon RC - Rock Core ST - Shelby Tube PT - Piston Tube VT - Shear Vane Test
Piezometer Backfill Type: Bentonite, Drill Cuttings, Sand, Slough
Logged by: Ivanna Montani
Reviewed by: Rhett Bonham
Stantec



LOCATION PLAN
1:200

LOCATION APPROVED
UNDERGROUND STRUCTURES

SUPV. U/G STRUCTURES COMMITTEE DATE

NOTE:
LOCATION OF UNDERGROUND STRUCTURES AS SHOWN ARE BASED ON THE BEST INFORMATION AVAILABLE BUT NO GUARANTEE IS GIVEN THAT ALL EXISTING UTILITIES ARE SHOWN OR THAT THE GIVEN LOCATIONS ARE EXACT. CONFIRMATION OF EXISTENCE AND EXACT LOCATION OF ALL SERVICES MUST BE OBTAINED FROM THE INDIVIDUAL UTILITIES BEFORE PROCEEDING WITH CONSTRUCTION.

B.M.
ELEV.

NO.	REVISIONS	DATE	BY
0	ISSUED FOR TENDER	19.05.03	M.J.B.

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500 - 311 Portage Avenue, Winnipeg MB Canada
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DESIGNED BY	K.S.A.	CHECKED BY	K.S.A.
DRAWN BY	J.M.B.	APPROVED BY	
HOR. SCALE: VERTICAL:	1:50 OR AS NOTED	RELEASED FOR CONSTRUCTION:	
DATE	2019.05.03	DATE	

ENGINEER'S SEAL

CONSULTANT DRAWING NO.
B-101

Winnipeg
THE CITY OF WINNIPEG
PUBLIC WORKS DEPARTMENT
ENGINEERING DIVISION

DUBLIN AVENUE BRIDGE REPLACEMENT
TESTHOLE LOG AND LOCATION PLAN

SHEET 3 OF 46
CAD FILE DRAWING NUMBER 33340b-101-926.dwg
CITY DRAWING NUMBER P-3503-3

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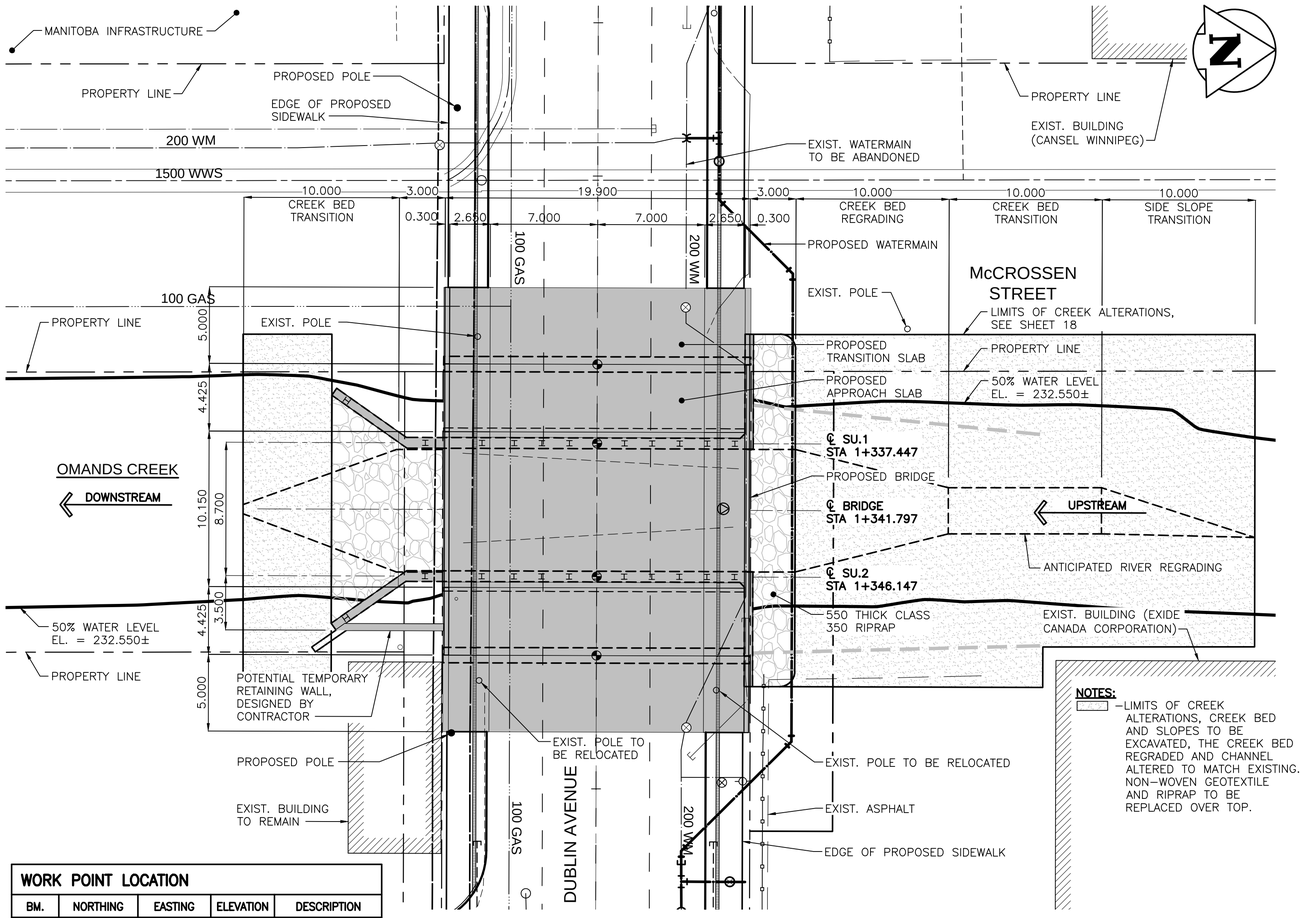
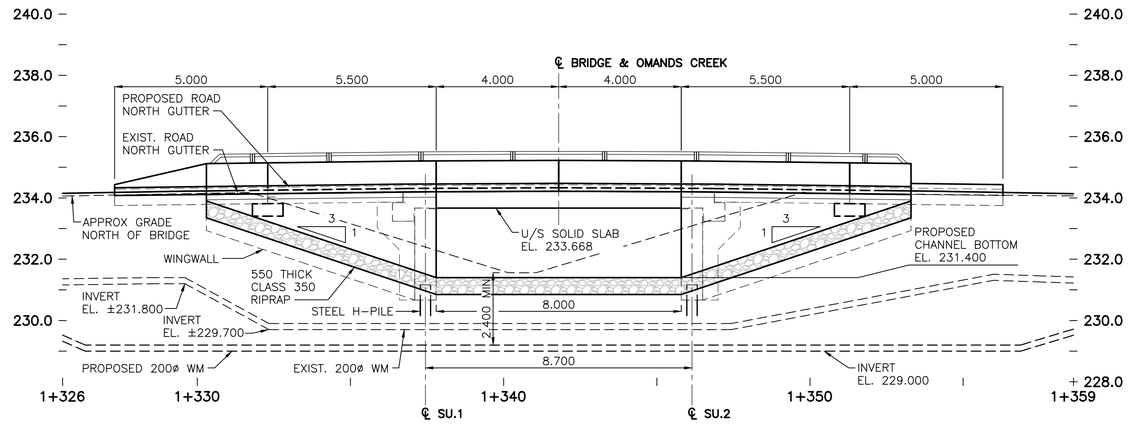


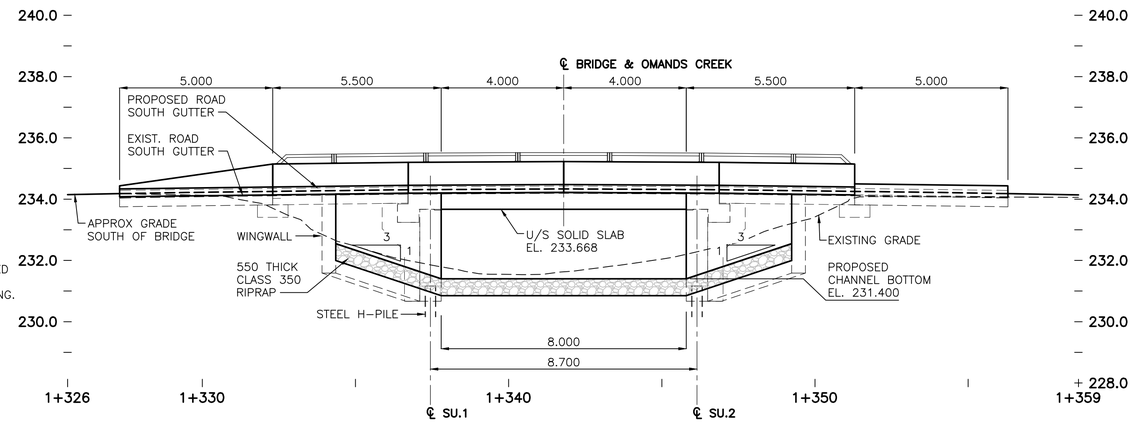
BRIDGE PLAN
1:200

WORK POINT LOCATION				
BM.	NORTHING	EASTING	ELEVATION	DESCRIPTION
WP-1	5485093.083	524262.511	464.161	
WP-2	5485093.524	524280.305	464.161	
WP-3	5485093.083	524262.511	464.161	
WP-4	5485093.524	524280.305	464.161	



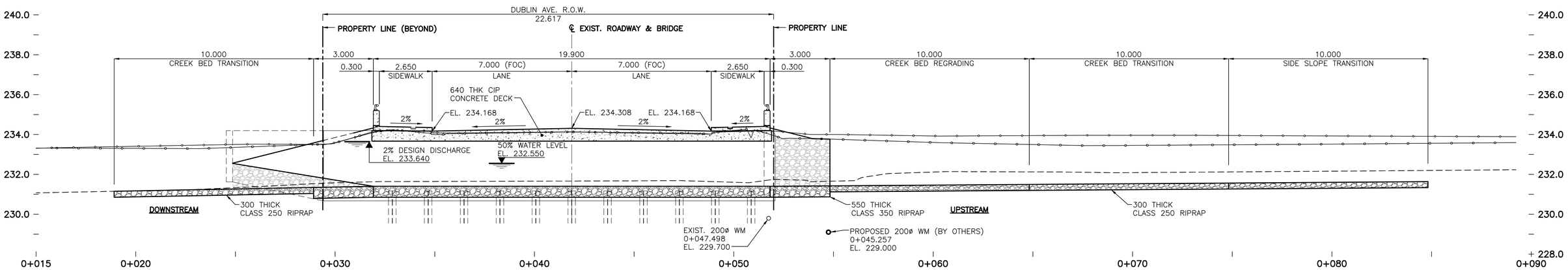
BRIDGE ELEVATION – NORTH END
1:100

NOTES: CHAINLINK FENCE NOT SHOWN FOR CLARITY



BRIDGE ELEVATION – SOUTH END
1:100

NOTES: CHAINLINK FENCE NOT SHOWN FOR CLARITY



BRIDGE SECTION / CREEK PROFILE
1:100

EXISTING	LEGEND – PLAN	NEW	EXISTING	LEGEND – PLAN	NEW	EXISTING	LEGEND – PLAN	NEW
	GAS			EXISTING GRADE				
	MTS			TRAFFIC SIGN				
	ABANDONED MTS			MANHOLE				
	WATERMAIN			WATER VALVE				
	ABANDONED WATERMAIN			FIRE HYDRANT				
	WWS			SURVEY BAR				
	TEMPORARY / EXISTING FENCE			EXISTING BUILDING				
	WOOD PARKING BARRIER							
	PROPERTY LINE							
	SEWER LINE							
	ANTICIPATED RIVER REGRADING							

LOCATION APPROVED
UNDERGROUND STRUCTURES

SUPV. U/G STRUCTURES COMMITTEE — DATE

NOTE:
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B.M. ELEV.			
0	ISSUED FOR TENDER	19.09.06	M.J.B.
NO.	REVISIONS	DATE	BY

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DESIGNED BY	H.M.V.	CHECKED BY	C.D.
DRAWN BY	J.M.B.	APPROVED BY	K.S.A.
HOR. SCALE: VERTICAL:	AS NOTED	RELEASED FOR CONSTRUCTION:	
DATE	2019.05.29	DATE	

ENGINEER'S SEAL

CONSULTANT DRAWING NO.
S-102

THE CITY OF WINNIPEG
PUBLIC WORKS DEPARTMENT
ENGINEERING DIVISION

DUBLIN AVENUE BRIDGE REPLACEMENT
PROPOSED BRIDGE STRUCTURE
GENERAL ARRANGEMENT

SHEET 5 OF 48
CAD FILE DRAWING NUMBER 33340s-102-926.dwg
CITY DRAWING NUMBER B105-19-5

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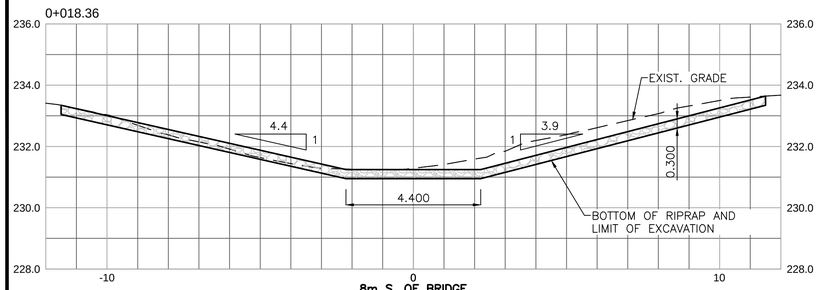
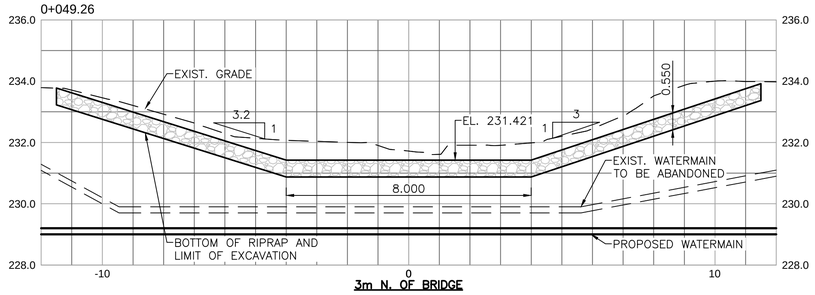
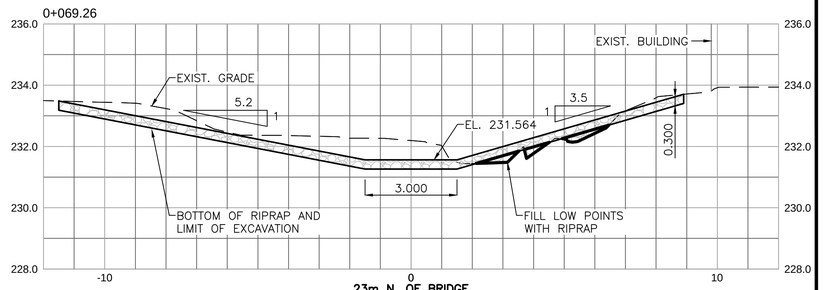


8m S. OF BRIDGE



3m N. OF BRIDGE



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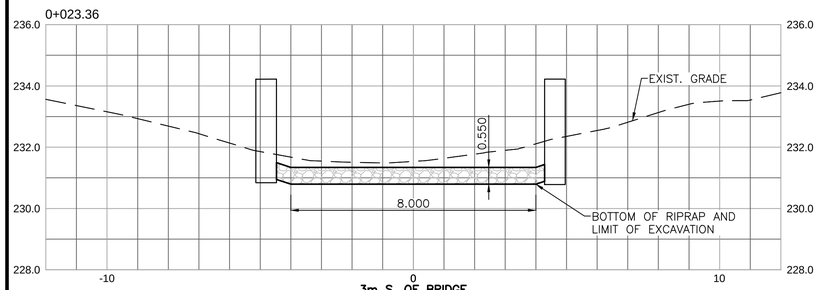
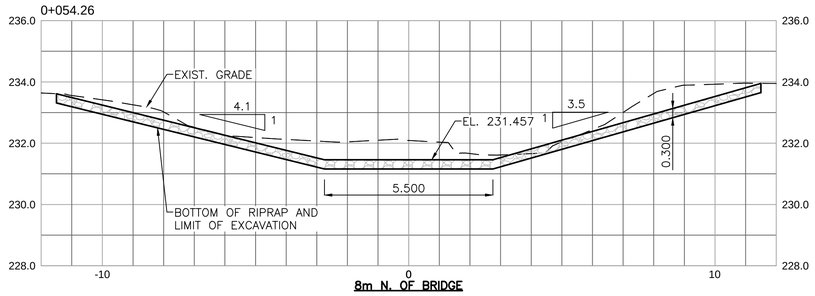


3m S. OF BRIDGE



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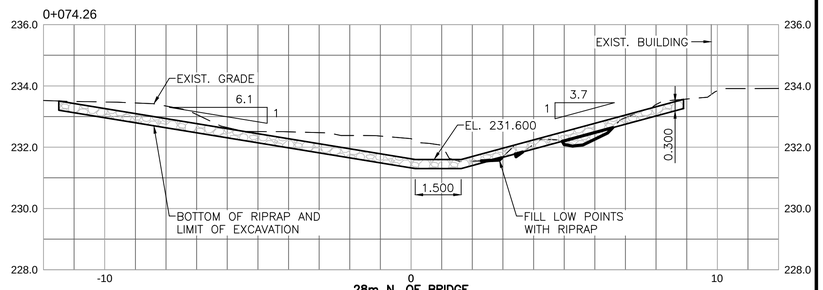

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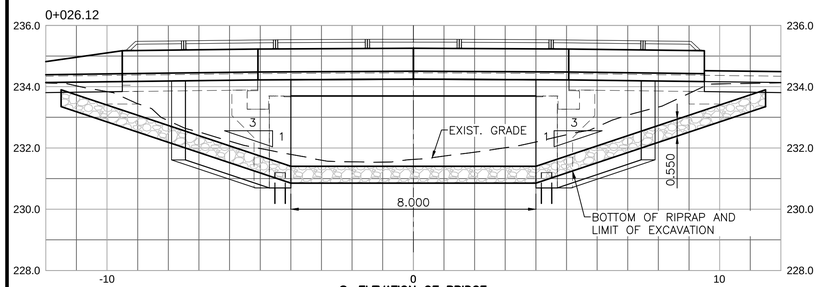
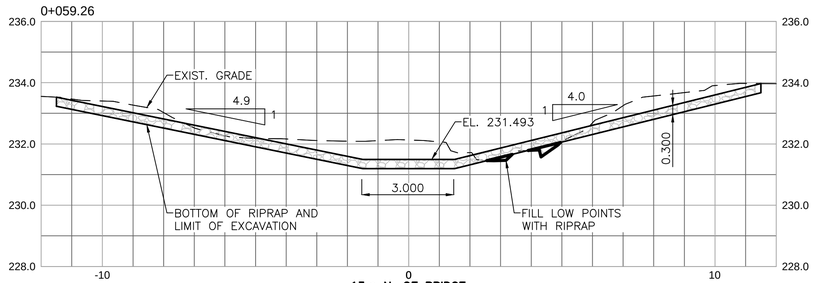


S. ELEVATION OF BRIDGE



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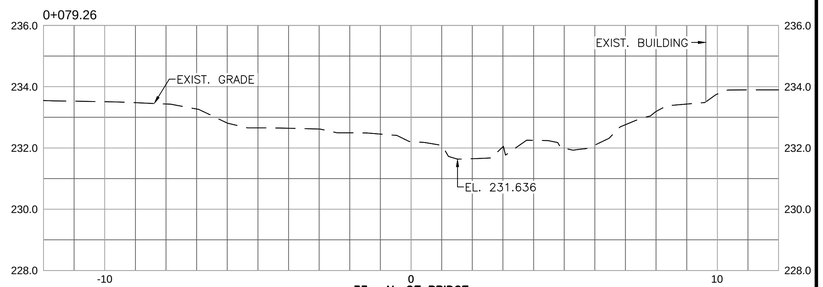

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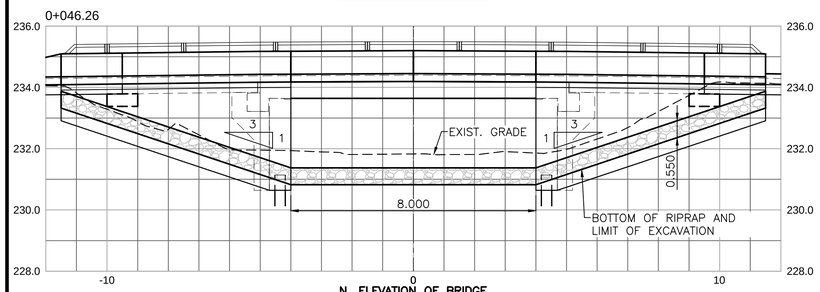

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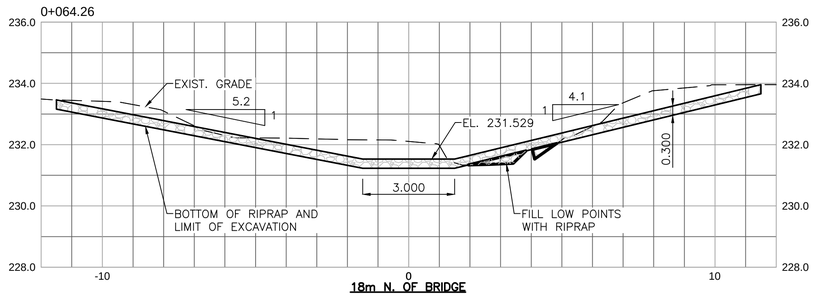

18m N. OF BRIDGE

NOTES: ALL EXCAVATED MATERIAL TO BE SENT FOR REMEDIATION

LOCATION APPROVED
UNDERGROUND STRUCTURES

SUPV. U/G STRUCTURES COMMITTEE — DATE

NOTE:
LOCATION OF UNDERGROUND STRUCTURES AS SHOWN ARE BASED ON THE BEST INFORMATION AVAILABLE BUT NO GUARANTEE IS GIVEN THAT ALL EXISTING UTILITIES ARE SHOWN OR THAT THE GIVEN LOCATIONS ARE EXACT. CONFIRMATION OF EXISTENCE AND EXACT LOCATION OF ALL SERVICES MUST BE OBTAINED FROM THE INDIVIDUAL UTILITIES BEFORE PROCEEDING WITH CONSTRUCTION.

B.M.
ELEV.

NO.	REVISIONS	DATE	BY
0	ISSUED FOR TENDER	19.09.06	M.J.B.

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DESIGNED BY	H.M.V.	CHECKED BY	C.D.
DRAWN BY	J.M.B.	APPROVED BY	K.S.A.
HOR. SCALE:	1:100	RELEASED FOR CONSTRUCTION:	
VERTICAL:	1:100		
DATE	2019.05.29	DATE	

ENGINEER'S SEAL

CONSULTANT DRAWING NO.
S-201

Winnipeg
THE CITY OF WINNIPEG
PUBLIC WORKS DEPARTMENT
ENGINEERING DIVISION

DUBLIN AVENUE BRIDGE REPLACEMENT
PROPOSED BRIDGE STRUCTURE
CREEK WORK - SECTIONS

SHEET 18 OF 48
CAD FILE DRAWING NUMBER 33340s-201-926.dwg
CITY DRAWING NUMBER B105-19-18

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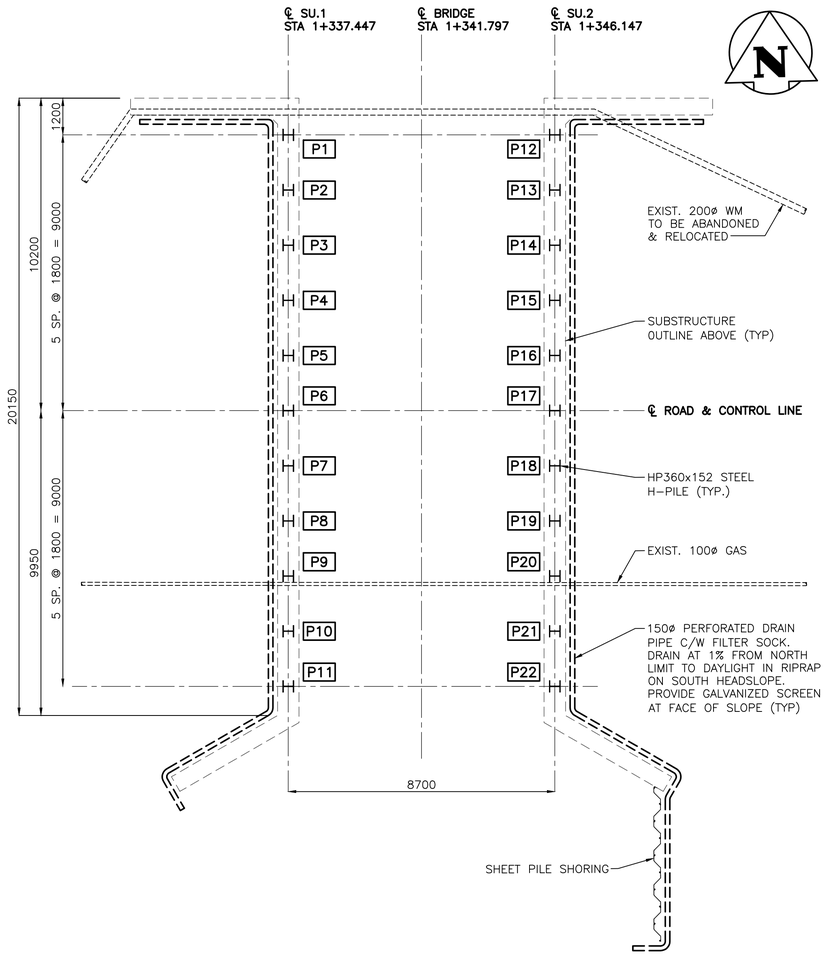
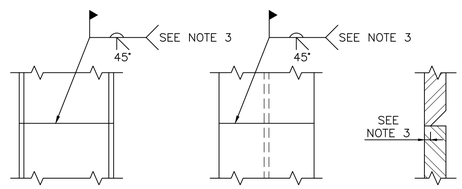


PILE PLAN
1:100

PILE LENGTH TABLE			
MARK	STRAIGHT/ BATTERED	CUT-OFF ELEVATION (m)	PILE LENGTH (ESTIMATE) (m)
P1	STR	231.078	–
P2	STR	231.078	–
P3	STR	231.078	–
P4	STR	231.078	–
P5	STR	231.078	–
P6	STR	231.078	–
P7	STR	231.078	–
P8	STR	231.078	–
P9	STR	231.078	–
P10	STR	231.078	–
P11	STR	231.078	–
P12	STR	231.078	–
P13	STR	231.078	–
P14	STR	231.078	–
P15	STR	231.078	–
P16	STR	231.078	–
P17	STR	231.078	–
P18	STR	231.078	–
P19	STR	231.078	–
P20	STR	231.078	–
P21	STR	231.078	–
P22	STR	231.078	–
TOTAL PILE LENGTH (m) :			–

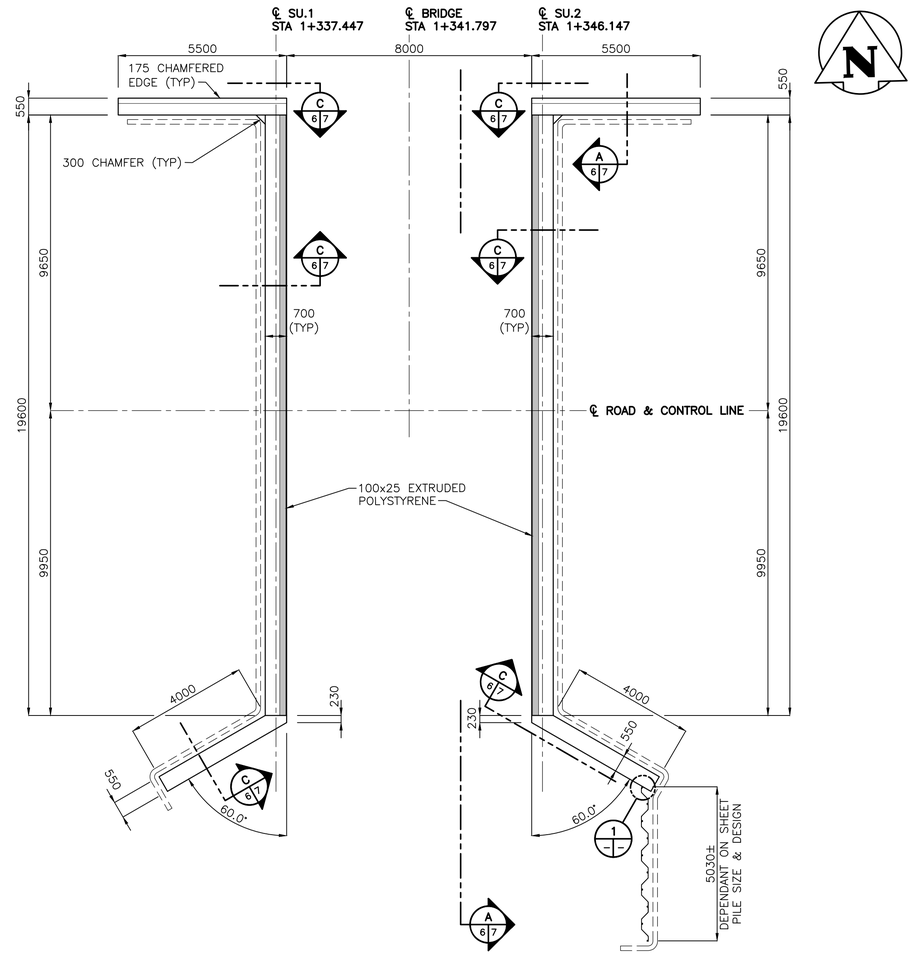


DETAIL OF STEEL HP PILE SPLICE
1:10

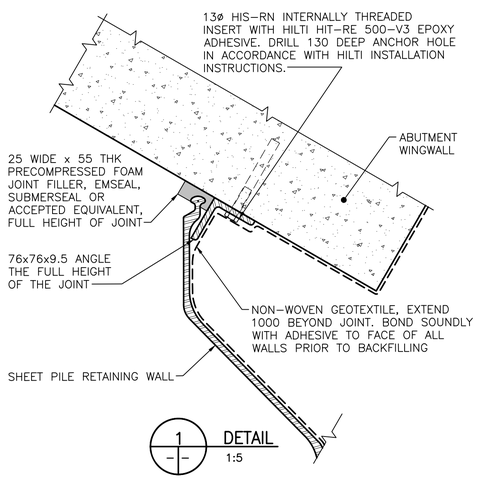
WELDING NOTES:

1. LOW HYDROGEN *E70 SERIES ELECTRODES SHALL BE USED.
2. THE MINIMUM ROOT PASS SHALL BE 6mm.
3. PREPARATION FOR WELDING REQUIRES A 3mm LAND.
4. WELD BOTH FLANGES AND WEB AS SHOWN.

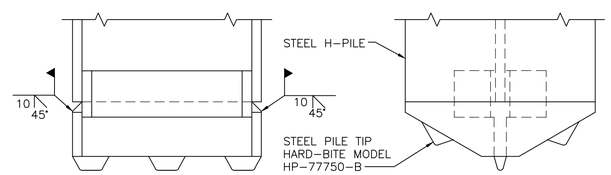
* E48018 EQUIVALENT METRIC ELECTRODE



SUBSTRUCTURE PLAN
1:100



DETAIL
1:5



DETAIL OF STEEL HP PILE TIP
1:5

NOTE:

1. EDGES OF STEEL PILE TIP TO BE GROUND ON 45° BEVEL FOR 10mm.
2. LOW HYDROGEN *E70 SERIES ELECTRODES SHALL BE USED.
3. THE MINIMUM ROOT PASS SHALL BE 6mm.

*E48018 EQUIVALENT METRIC ELECTRODE

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METRIC
WHOLE NUMBERS INDICATE MILLIMETRES
DECIMALIZED NUMBERS INDICATE METRES

LOCATION APPROVED
UNDERGROUND STRUCTURES

SUPV. U/G STRUCTURES COMMITTEE — DATE

NOTE:
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B.M.
ELEV.

NO.	REVISIONS	DATE	BY
0	ISSUED FOR TENDER	19.05.03	M.J.B.

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DRAWN BY	J.M.B.	APPROVED BY	
HOR. SCALE: VERTICAL:	1:50 OR AS NOTED	RELEASED FOR CONSTRUCTION:	
DATE	2019.05.03	DATE	

ENGINEER'S SEAL

CONSULTANT DRAWING NO.
S-103

Winnipeg
THE CITY OF WINNIPEG
PUBLIC WORKS DEPARTMENT
ENGINEERING DIVISION

DUBLIN AVENUE BRIDGE REPLACEMENT
PROPOSED BRIDGE STRUCTURE
FOUNDATION & SUBSTRUCTURE PLANS

SHEET 6 OF 46
CAD FILE DRAWING NUMBER 33340s-103-926.dwg
CITY DRAWING NUMBER P-3503-6

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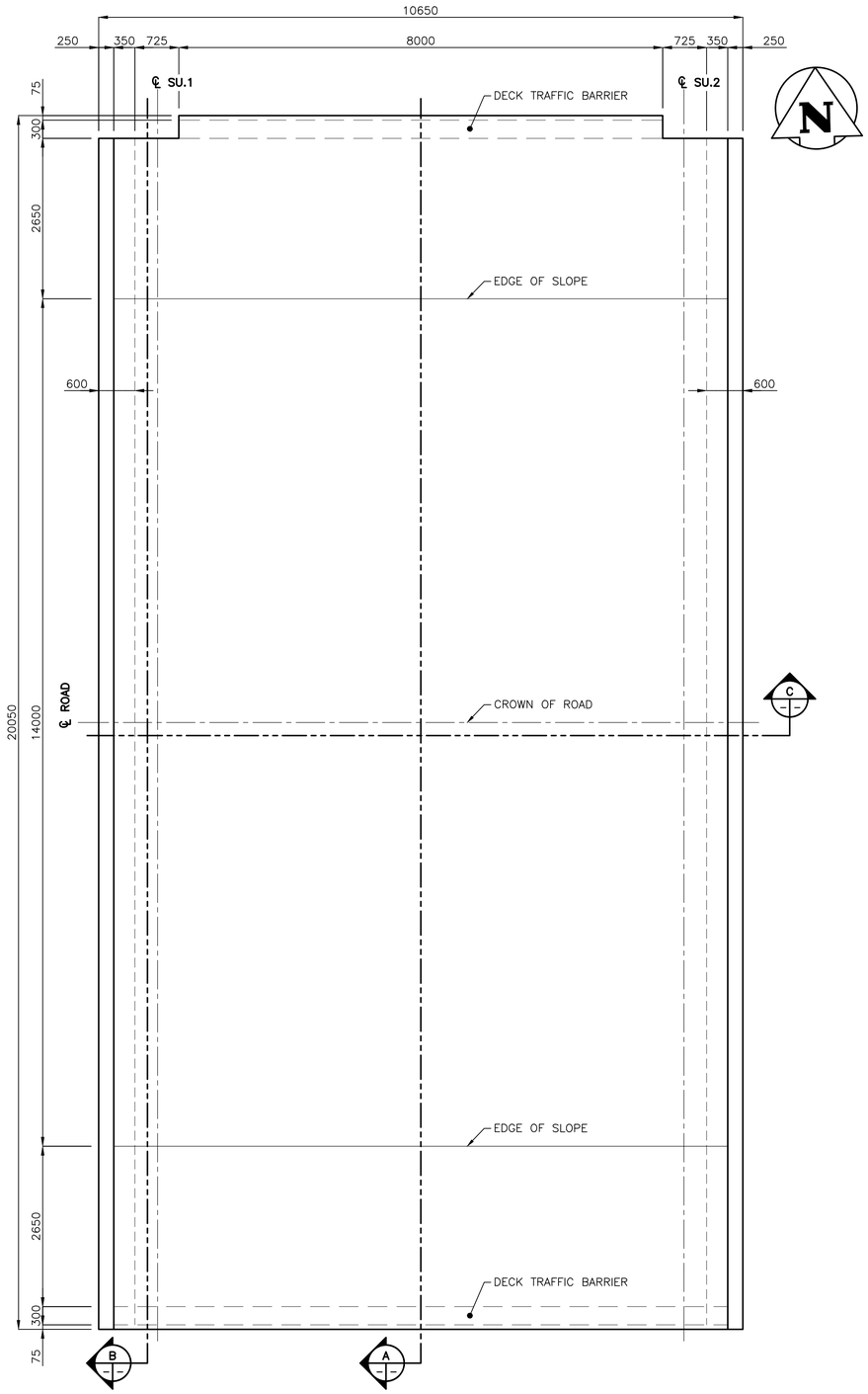
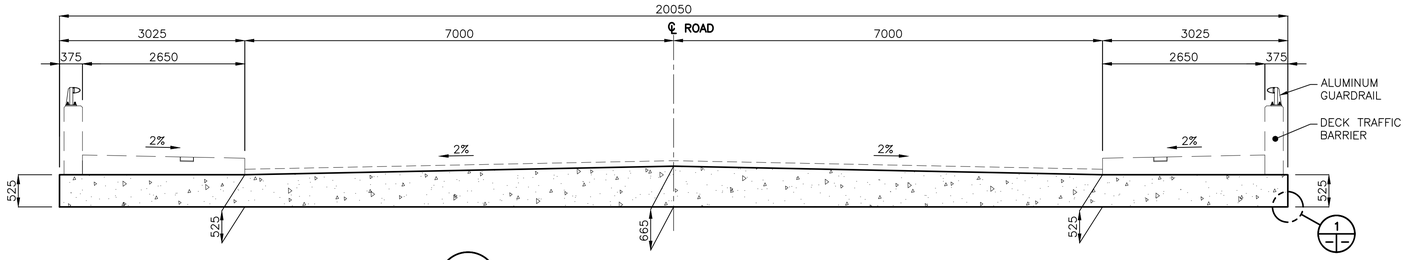
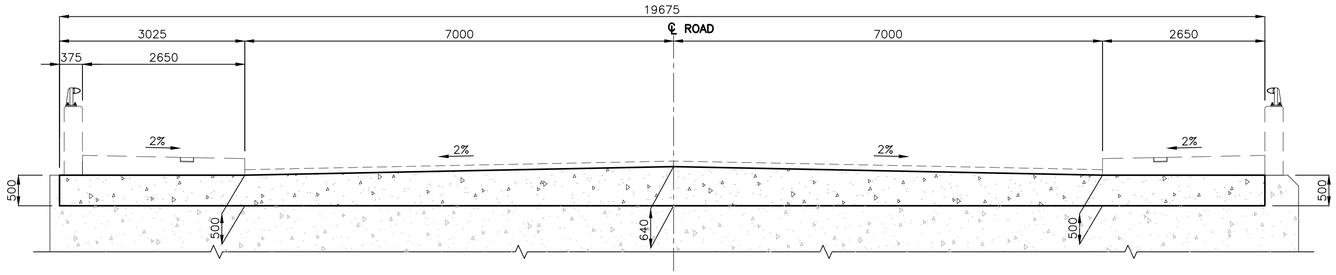


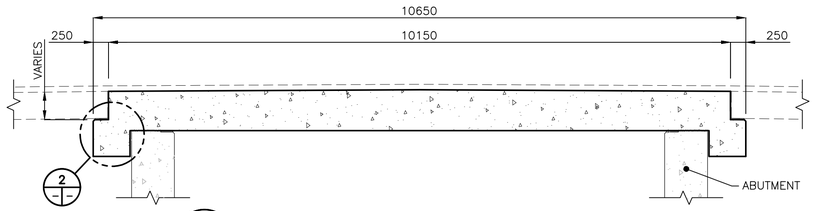
PLAN – BRIDGE DECK SLAB
1:50



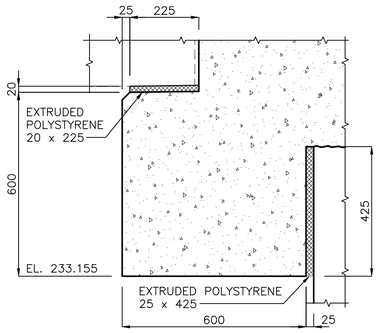
A SECTION – BRIDGE DECK SLAB GEOMETRY
1:50



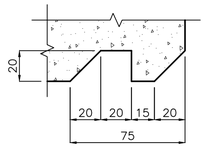
B SECTION – BRIDGE DECK SLAB GEOMETRY
1:50



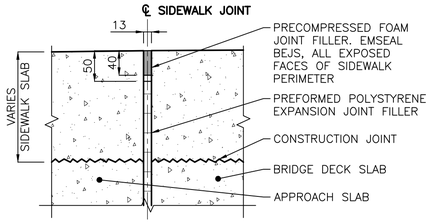
C SECTION – BRIDGE DECK SLAB GEOMETRY
1:50



2 DETAIL
1:5



1 DETAIL
1:2



SIDEWALK JOINT DETAIL
1:5

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METRIC
WHOLE NUMBERS INDICATE MILLIMETRES
DECIMALIZED NUMBERS INDICATE METRES

LOCATION APPROVED
UNDERGROUND STRUCTURES

SUPV. U/G STRUCTURES COMMITTEE — DATE

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B.M.
ELEV.

NO.	REVISIONS	DATE	BY
0	ISSUED FOR TENDER	19.05.03	M.J.B.

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ENGINEER'S SEAL

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Winnipeg
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ENGINEERING DIVISION

DUBLIN AVENUE BRIDGE REPLACEMENT
PROPOSED BRIDGE STRUCTURE
DECK CONCRETE DETAILS

SHEET 10 OF 46
CAD FILE DRAWING NUMBER 33340s-107-926.dwg
CITY DRAWING NUMBER P-3503-10

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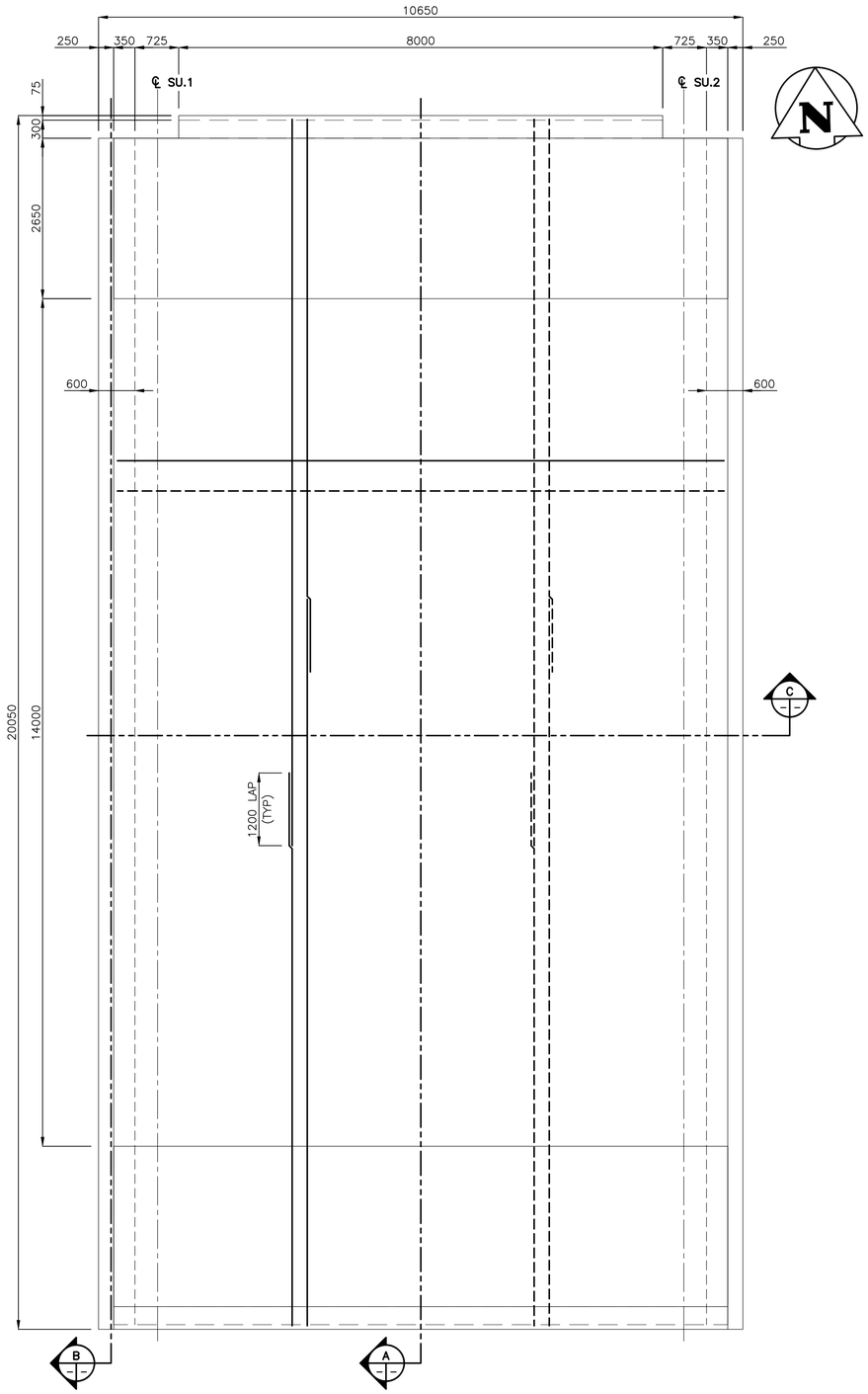
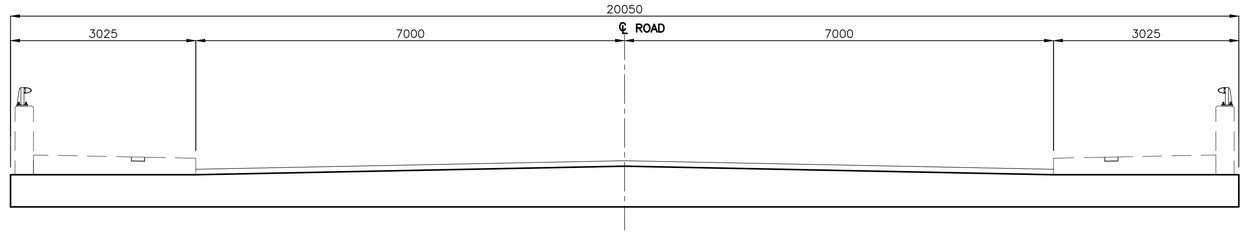
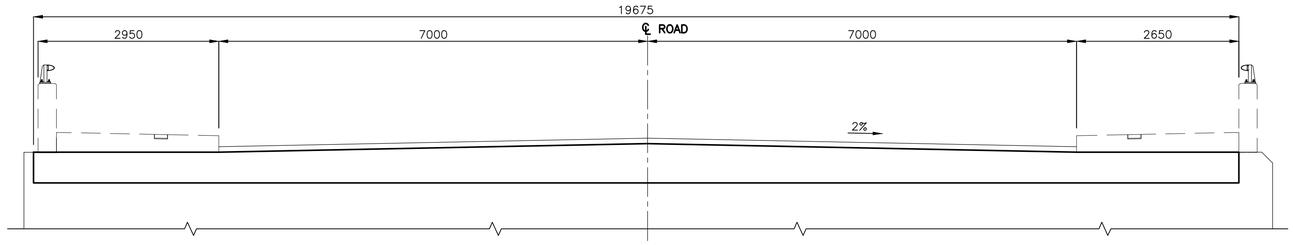


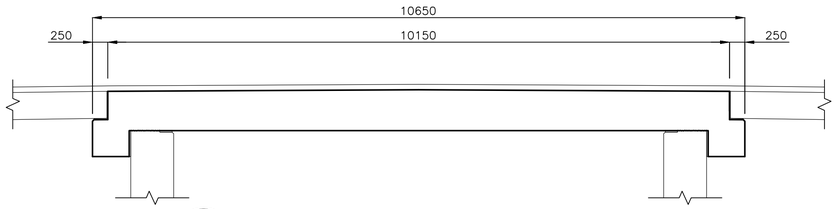
PLAN – BRIDGE DECK SLAB REINFORCEMENT
1:50



A SECTION – BRIDGE DECK SLAB REINFORCEMENT
1:50



B SECTION – BRIDGE DECK SLAB REINFORCEMENT
1:50



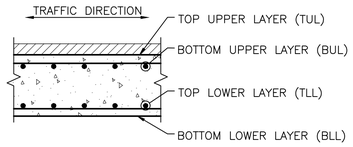
C SECTION – BRIDGE DECK SLAB REINFORCEMENT
1:50

SYMBOLS FOR REINFORCING PLAN

TOP REINFORCING BAR

BOTTOM REINFORCING BAR

BRIDGE DECK SLAB REBAR LAYERS



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DECIMALIZED NUMBERS INDICATE METRES

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UNDERGROUND STRUCTURES

SUPV. U/G STRUCTURES COMMITTEE — DATE

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B.M. ELEV.

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ENGINEER'S SEAL

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Winnipeg
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PUBLIC WORKS DEPARTMENT
ENGINEERING DIVISION

DUBLIN AVENUE BRIDGE REPLACEMENT
PROPOSED BRIDGE STRUCTURE
DECK REINFORCING DETAILS

SHEET 11 OF 46
CAD FILE DRAWING NUMBER 33340s-107-926.dwg
CITY DRAWING NUMBER P-3503-6

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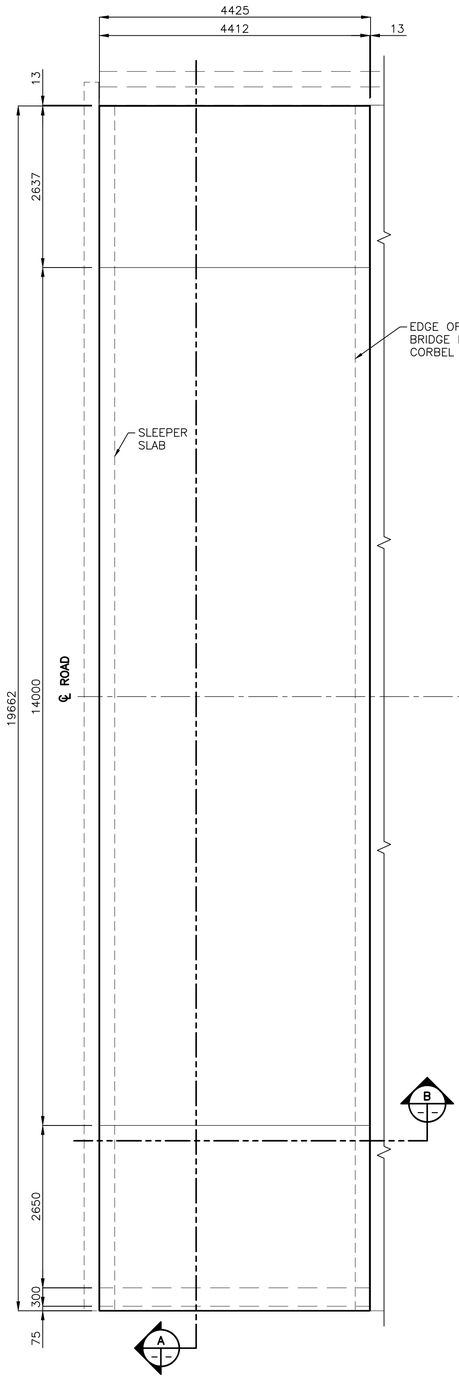
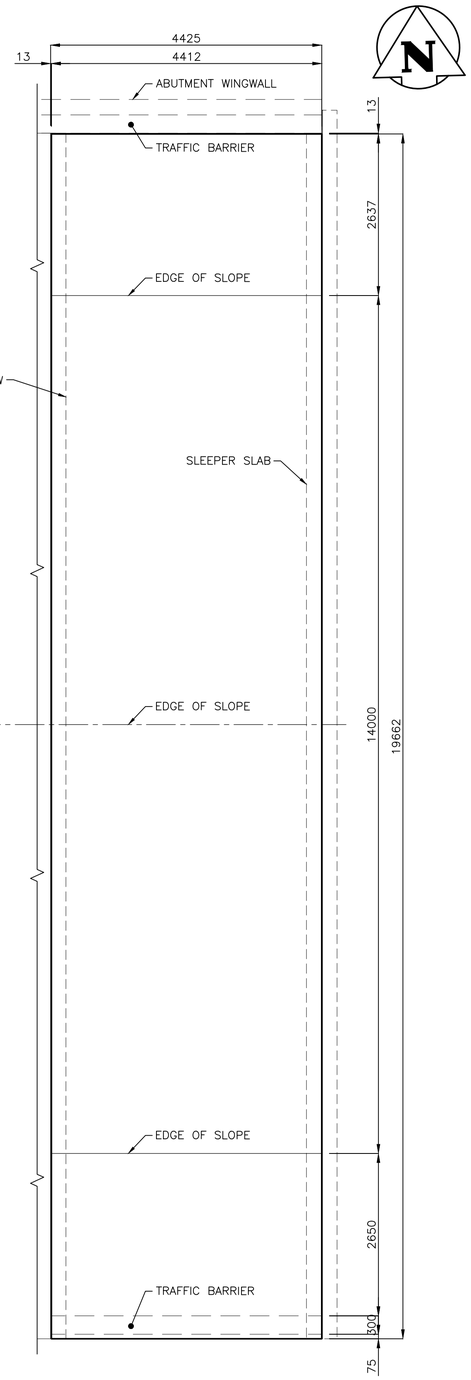
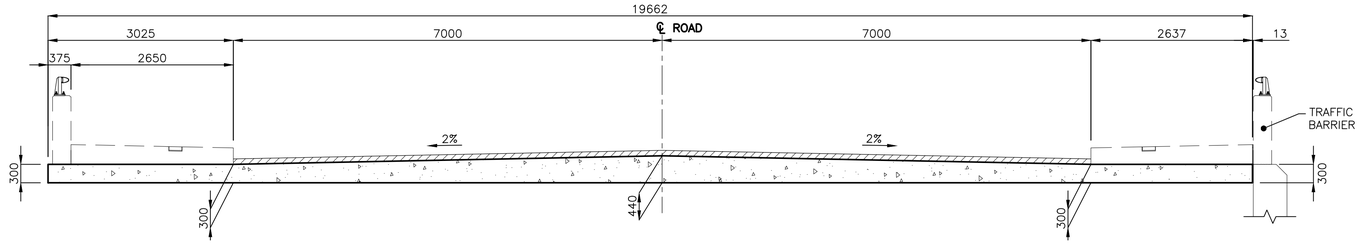


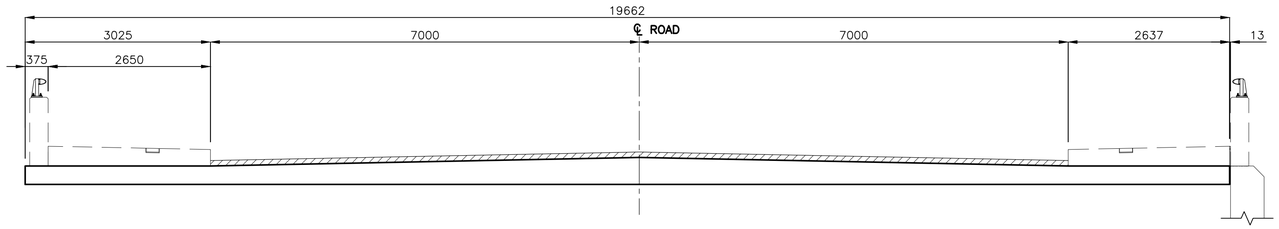
PLAN – WEST APPROACH SLAB
1:50



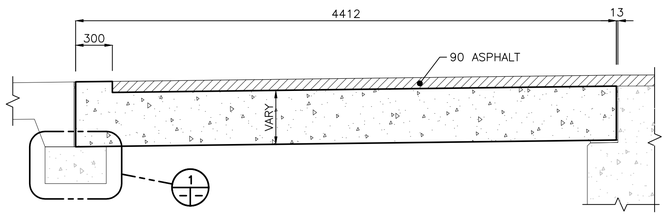
PLAN – EAST APPROACH SLAB
1:50



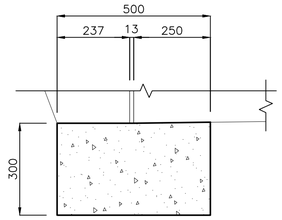
A SECTION – APPROACH SLAB GEOMETRY
1:50



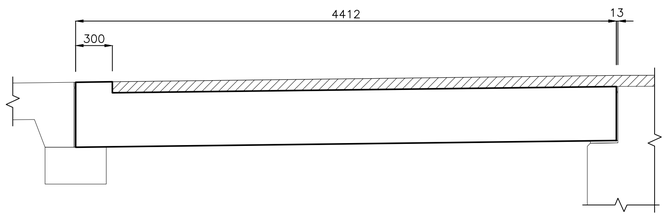
A SECTION – APPROACH SLAB REINFORCEMENT
1:50



B SECTION – APPROACH SLAB GEOMETRY
1:25



1 DETAIL – SLEEPER SLAB
1:10

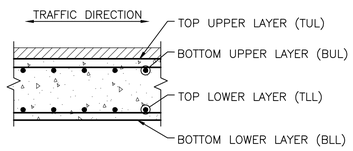


B SECTION – APPROACH SLAB REINFORCEMENT
1:25

SYMBOLS FOR REINFORCING PLAN

TOP REINFORCING BAR
BOTTOM REINFORCING BAR

APPROACH SLAB REBAR LAYERS



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Winnipeg
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PUBLIC WORKS DEPARTMENT
ENGINEERING DIVISION

DUBLIN AVENUE BRIDGE REPLACEMENT
PROPOSED BRIDGE STRUCTURE
APPROACH SLAB DETAILS

SHEET 12 OF 46
CAD FILE DRAWING NUMBER 33340s-109-926.dwg
CITY DRAWING NUMBER P-3503-12

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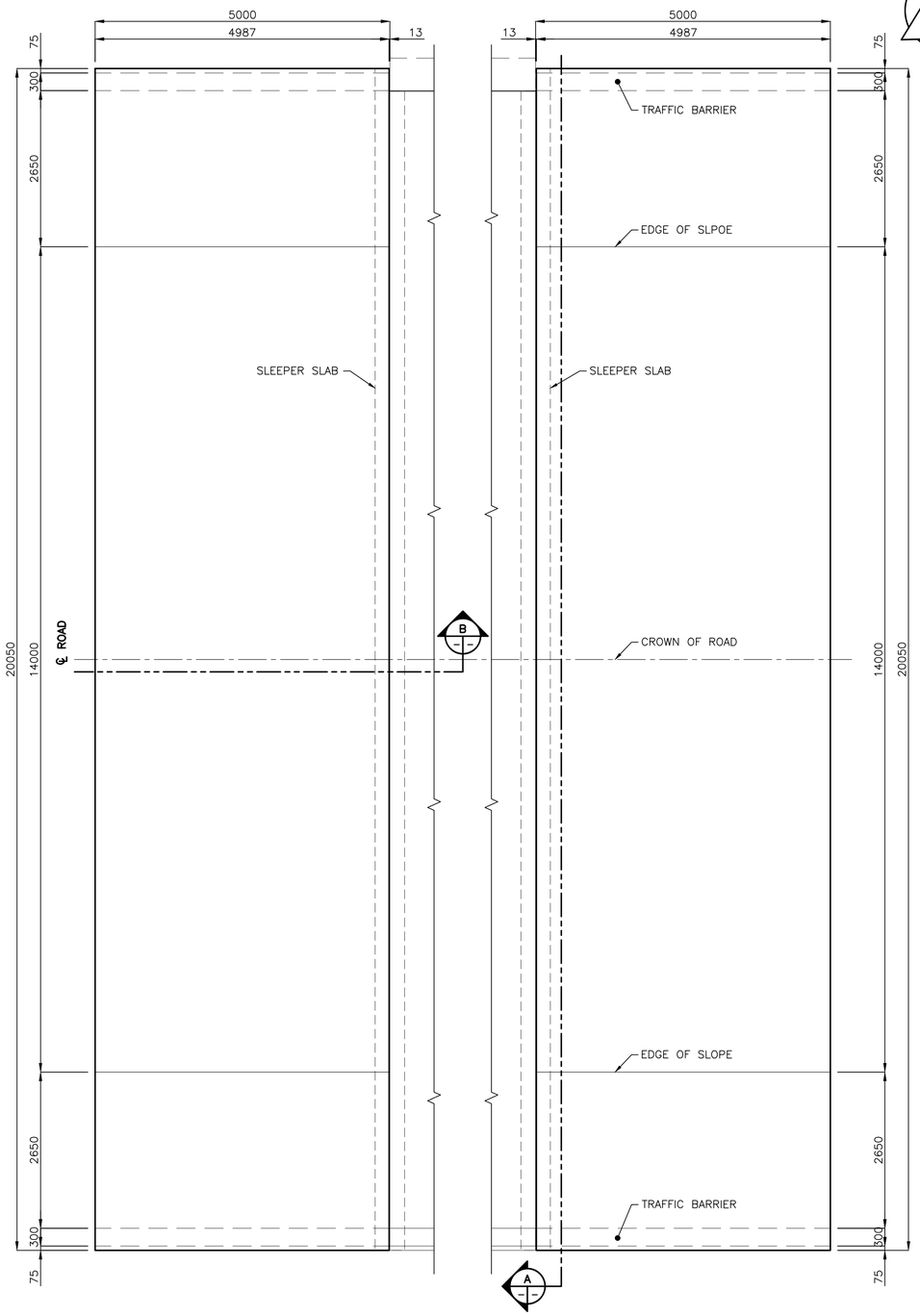
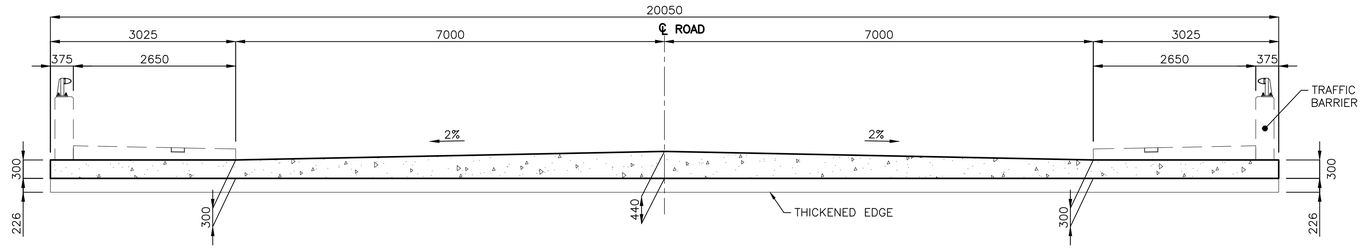
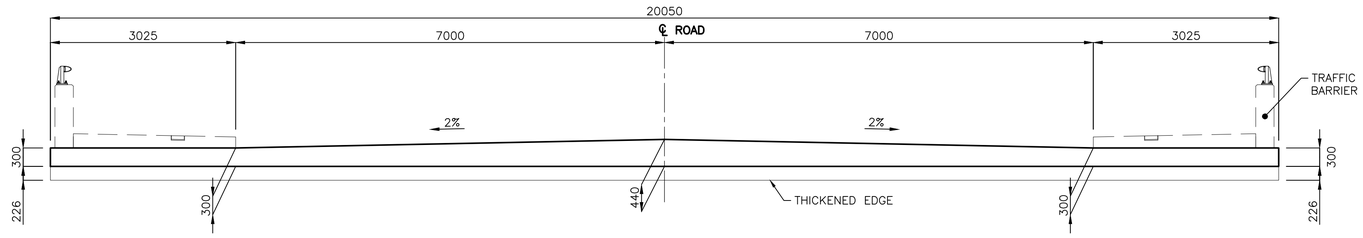


PLAN – WEST TRANSITION SLAB
1:50

PLAN – EAST TRANSITION SLAB
1:50



A
SECTION – TRANSITION SLAB GEOMETRY
1:50



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SECTION – TRANSITION SLAB REINFORCEMENT
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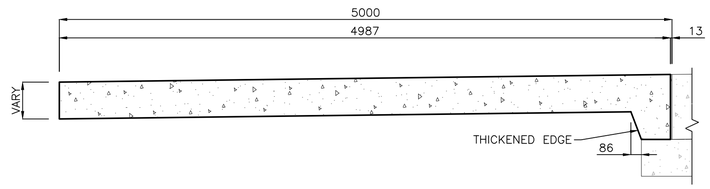
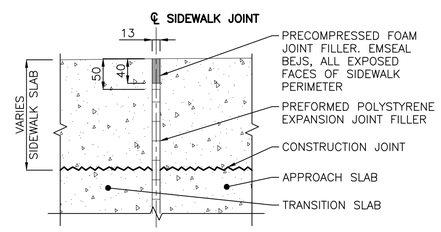
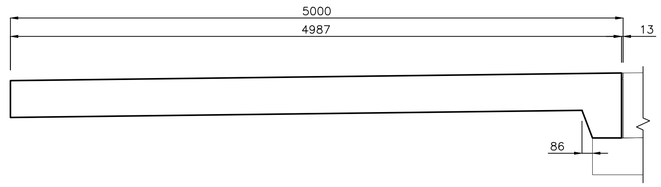


B
SECTION – TRANSITION SLAB GEOMETRY
1:25



SIDEWALK JOINT DETAIL
1:5

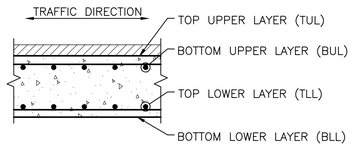


B
SECTION – TRANSITION SLAB REINFORCEMENT
1:25

SYMBOLS FOR REINFORCING PLAN

TOP REINFORCING BAR
BOTTOM REINFORCING BAR

TRANSITION SLAB REBAR LAYERS



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No. 1301

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UNDERGROUND STRUCTURES

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B.M.
ELEV.

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DRAWN BY	J.M.B.	APPROVED BY	
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Winnipeg
THE CITY OF WINNIPEG
PUBLIC WORKS DEPARTMENT
ENGINEERING DIVISION

DUBLIN AVENUE BRIDGE REPLACEMENT
PROPOSED BRIDGE STRUCTURE
TRANSITION SLAB DETAILS

SHEET 13 OF 46
CAD FILE DRAWING NUMBER 33340s-110-926.dwg
CITY DRAWING NUMBER P-3503-13

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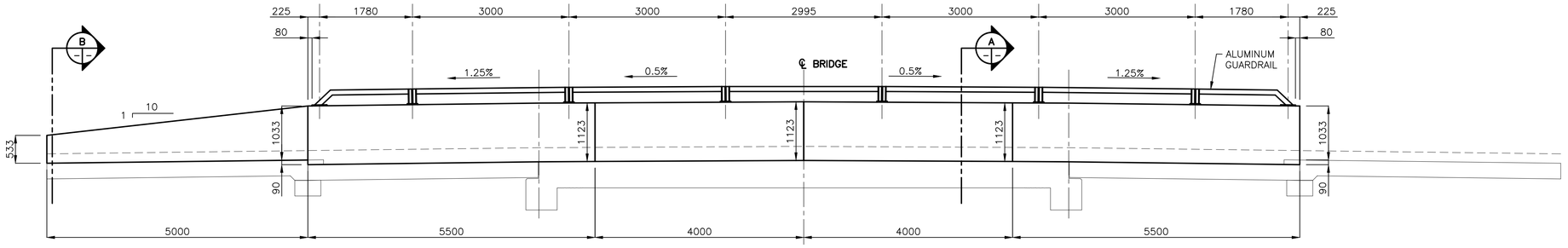
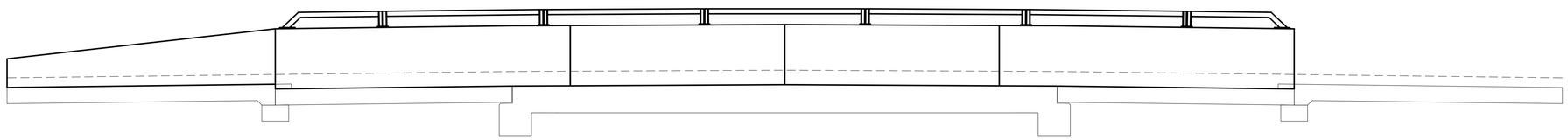
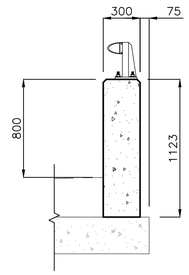


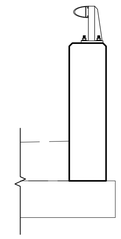
ELEVATION – NORTH TRAFFIC BARRIER
1:50



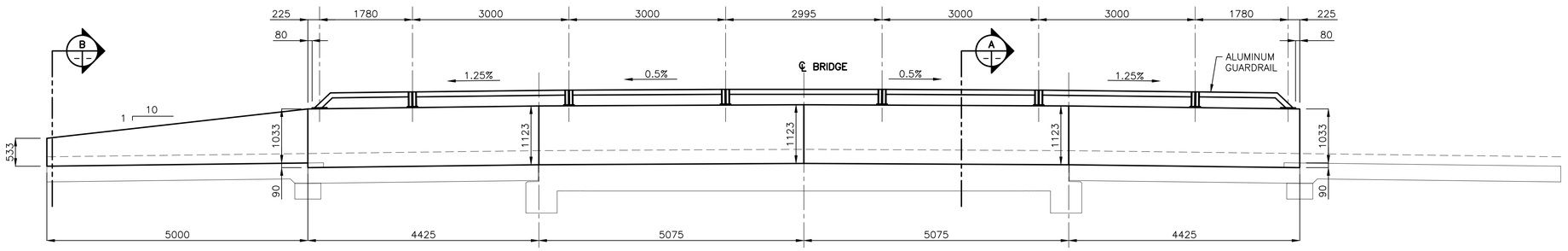
ELEVATION – NORTH TRAFFIC BARRIER REINFORCEMENT
1:50



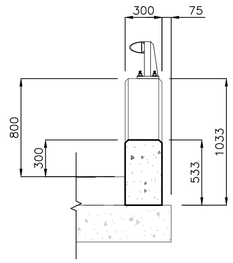
A SECTION – BARRIER
1:25



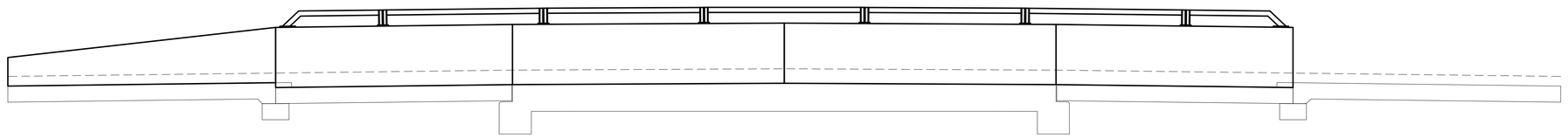
A SECTION – BARRIER REINFORCEMENT
1:25



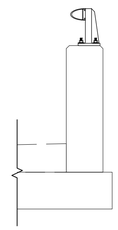
ELEVATION – SOUTH TRAFFIC BARRIER
1:50



B SECTION – BARRIER
1:25



ELEVATION – SOUTH TRAFFIC BARRIER REINFORCEMENT
1:50



B SECTION – BARRIER REINFORCEMENT
1:25

APEGM
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Stantec Consulting Ltd.
No. 1301

METRIC
WHOLE NUMBERS INDICATE MILLIMETRES
DECIMALIZED NUMBERS INDICATE METRES

LOCATION APPROVED
UNDERGROUND STRUCTURES

SUPV. U/G STRUCTURES COMMITTEE — DATE

NOTE:
LOCATION OF UNDERGROUND STRUCTURES AS SHOWN ARE BASED ON THE BEST INFORMATION AVAILABLE BUT NO GUARANTEE IS GIVEN THAT ALL EXISTING UTILITIES ARE SHOWN OR THAT THE GIVEN LOCATIONS ARE EXACT. CONFIRMATION OF EXISTENCE AND EXACT LOCATION OF ALL SERVICES MUST BE OBTAINED FROM THE INDIVIDUAL UTILITIES BEFORE PROCEEDING WITH CONSTRUCTION.

B.M.
ELEV.

NO.	REVISIONS	DATE	BY
0	ISSUED FOR TENDER	19.05.03	M.J.B.

Stantec
500 - 311 Portage Avenue, Winnipeg MB Canada
www.stantec.com

DESIGNED BY	K.S.A.	CHECKED BY	K.S.A.
DRAWN BY	J.M.B.	APPROVED BY	
HOR. SCALE: VERTICAL:	1:50 OR AS NOTED	RELEASED FOR CONSTRUCTION:	
DATE	2019.05.03	DATE	

ENGINEER'S SEAL

CONSULTANT DRAWING NO.
S-111

Winnipeg
THE CITY OF WINNIPEG
PUBLIC WORKS DEPARTMENT
ENGINEERING DIVISION

DUBLIN AVENUE BRIDGE REPLACEMENT
PROPOSED BRIDGE STRUCTURE
BARRIERS DETAILS

SHEET 14 OF 46
CAD FILE DRAWING NUMBER 33340s-111-926.dwg
CITY DRAWING NUMBER P-3503-14

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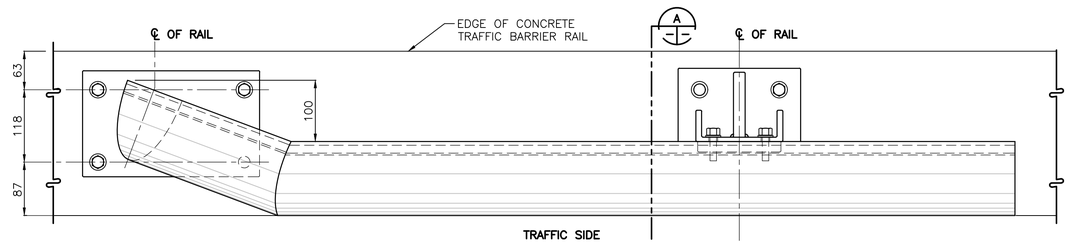
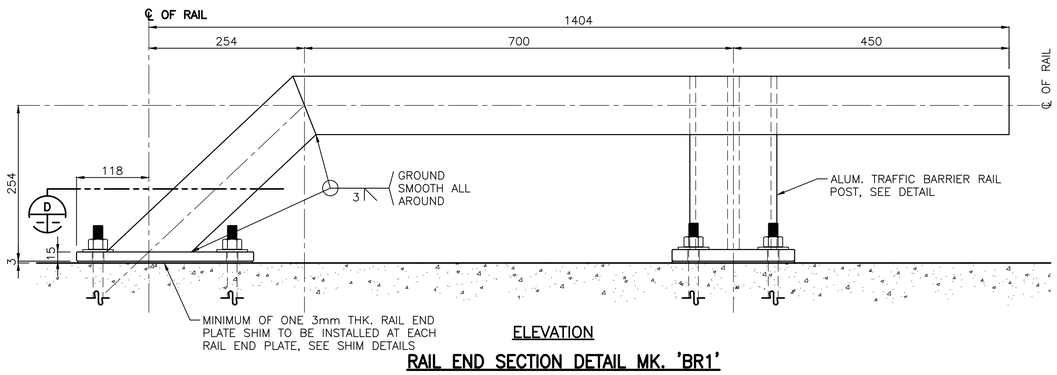
2019/05/03 4:37 PM By: Hon, Jade

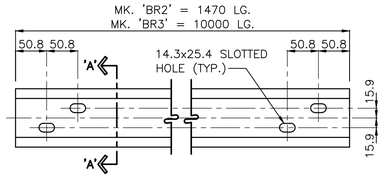


PLAN

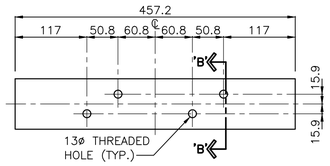


ELEVATION

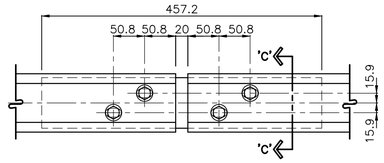
RAIL END SECTION DETAIL MK. 'BR1'
1:5



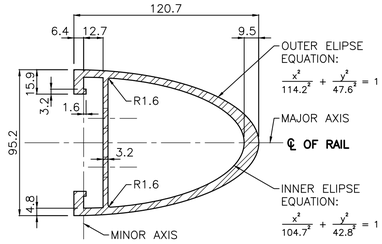
BARRIER RAIL DETAIL
MK. 'BR2', 'BR3' & 'BR4'
1:5



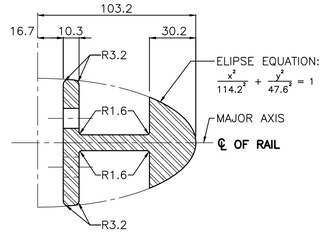
SPLICE BAR DETAIL
1:5



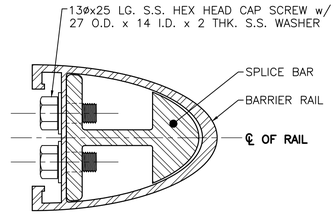
SPLICE BAR TO BARRIER RAIL ASSEMBLY
1:5



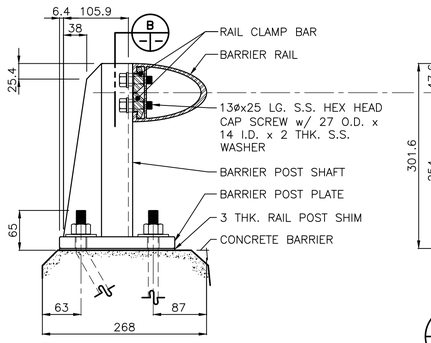
SECTION A–A
1:2



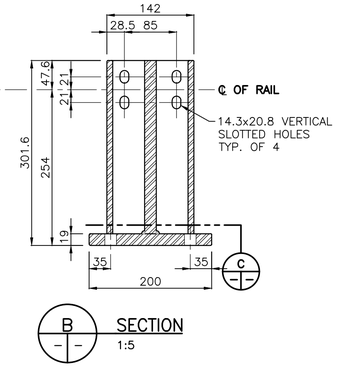
SECTION B–B
1:2



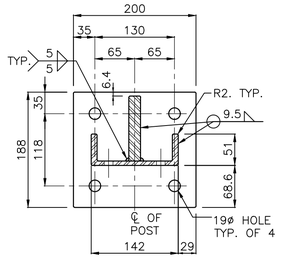
SECTION C–C
1:2



A
TRAFFIC BARRIER RAIL POST
1:5

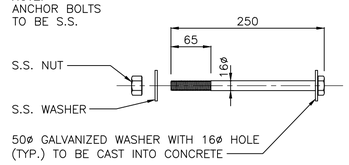


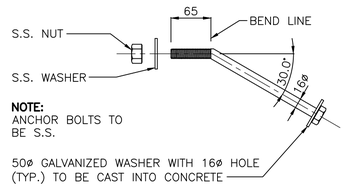
B
SECTION
1:5



C
BARRIER POST PLATE SECTION
1:5

NOTE:
ANCHOR BOLTS TO BE S.S.

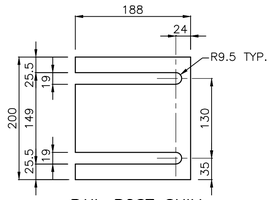




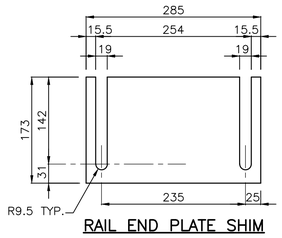
NOTE:
ANCHOR BOLTS TO BE S.S.

50ø GALVANIZED WASHER WITH 16ø HOLE (TYP.) TO BE CAST INTO CONCRETE

ANCHOR BOLT DETAIL
1:5

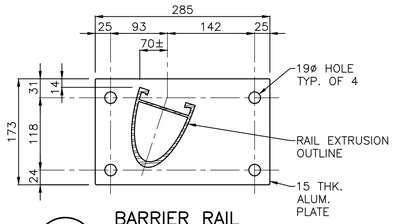


RAIL POST SHIM

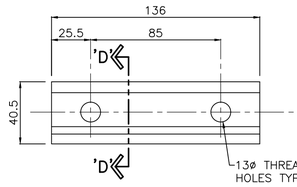


RAIL END PLATE SHIM

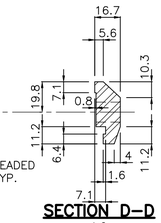
SHIM DETAILS
1:5



D
BARRIER RAIL END PLATE SECTION
1:5



RAIL CLAMP BAR DETAIL
1:2



SECTION D–D
1:2

NOTES:

1. THE 4–19ømm HOLES IN THE BARRIER POST AND RAIL PLATES ARE DESIGNED TO ACCOMMODATE 16ømm RAIL POST ANCHOR BOLTS AS DETAILED. SUPPLY WITH EACH ANCHOR BOLT: ONE S.S. PLAIN WASHER, ONE S.S. LOCK WASHER, ONE S.S. HEX. NUT AND ONE 50ø GALVANIZED PLATE WASHER.
2. A COMBINATION OF 1.5, 3.0 AND/OR 6.0mm THK. ALUM. RAIL POST PLATE SHIMS WERE USED AS REQUIRED TO SET THE BARRIER RAIL TO THE SPECIFIED HEIGHT (MINIMUM 3 THK. SHIM REQUIRED AT EACH POST OR PLATE).
3. ALL EDGES AND CORNERS OF THE BARRIER POST PLATES AND EXTRUSIONS WERE ROUNDED IN THE SHOP, TO A SMOOTH 2mm RADIUS TO THE SATISFACTION OF THE CONTRACT ADMINISTRATOR.
4. BOTTOM SURFACE OF THE SHIM (SURFACE IN CONTACT WITH CONCRETE) WAS PAINTED WITH 2 COATS OF ALKALI RESISTANT BITUMINOUS PAINT, EACH COAT BEING 1mm IN THICKNESS.

SPECIFICATIONS:

1. EXTRUDED ALUM. SHAPES AND PLATES CONFORM TO THE REQUIREMENTS OF A.S.T.M. B221, ALLOY 6061–T6 OR ALLOY 6351–T5 (MINIMUM ELG.ATION 10%)
2. THE S.S. HEX. HEAD AND SOCKET HEAD CAP SCREWS MEET THE REQUIREMENTS OF A.S.T.M. A276 TYPE 430 AND THE DIMENSIONAL REQUIREMENTS OF A.N.S.I. B18.3.
3. DIMENSIONAL TOLERANCES NOT SHOWN OR IMPLIED ARE INTENDED TO BE THOSE CONSISTENT WITH THE PROPER FUNCTIONING OF THE PART, INCLUDING ITS APPEARANCE AND ACCEPTED MANUFACTURING PRACTICES.
4. THE BARRIER POST SHAFT WERE FABRICATED FROM A SINGLE CHANNEL–SHAPE EXTRUSION WELDED TO A PLATE SHAPE. THE BARRIER POST PLATE AND BARRIER POST SHAFT WAS THEN BE WELDED TOGETHER.
5. WELDING CONFORMED TO THE REQUIREMENTS OF CSA STANDARDS S224–1969, WELDING ALUM. DESIGN AND WORKMANSHIP AND W47.2–1987, ALUM. WELDING QUALIFICATION CODE. ALUM. FILLER ALLOY SHALL BE ONE OF THE FOLLOWING: ER4043, ER5183, ER5554, ER5556 AND ER5654.
6. THE CONTRACTOR SUBMITTED COMPLETE SHOP DRAWINGS CONSISTING OF THREE PRINTS AND ONE REPRODUCIBLE SPIA TO THE CONTRACT ADMINISTRATOR FOR APPROVAL PRIOR TO FABRICATION OF ALUM. TRAFFIC BARRIER COMPONENTS.
7. ANTI–SEIZE COATING WERE APPLIED TO ALL THREADED COMPONENTS WHEN BEING ASSEMBLED,. I.E. LPS–3 MANUFACTURED BY HOLT–LLOYD (CANADA) LTD. MARKHAM, ONTARIO L3R 2Z3.

APEGM
Certificate of Authorization
Stantec Consulting Ltd.
No. 1301

METRIC
WHOLE NUMBERS INDICATE MILLIMETRES
DECIMALIZED NUMBERS INDICATE METRES

LOCATION APPROVED
UNDERGROUND STRUCTURES

SUPV. U/G STRUCTURES COMMITTEE — DATE

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B.M.
ELEV.

NO.	REVISIONS	DATE	BY
0	ISSUED FOR TENDER	19.05.03	M.J.B.

Stantec
500 - 311 Portage Avenue, Winnipeg MB Canada
www.stantec.com

DESIGNED BY	K.S.A.	CHECKED BY	K.S.A.
DRAWN BY	J.M.B.	APPROVED BY	
HOR. SCALE: VERTICAL:	1:50 OR AS NOTED	RELEASED FOR CONSTRUCTION:	
DATE	2019.05.03	DATE	

ENGINEER'S SEAL

CONSULTANT DRAWING NO.
S-113

Winnipeg
THE CITY OF WINNIPEG
PUBLIC WORKS DEPARTMENT
ENGINEERING DIVISION

DUBLIN AVENUE BRIDGE REPLACEMENT
PROPOSED BRIDGE STRUCTURE
ALUMINUM GUARDRAIL DETAILS

SHEET 16 OF 46
CAD FILE DRAWING NUMBER 33340s-113-926.dwg
CITY DRAWING NUMBER P-3503-16

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2019/05/03 2:42 PM By: Beernaerts, James

Fisheries and Oceans Canada | Pêches et Océans Canada

Canada

Request for Review

A) Contact information

Name of Business/Company:

Name of Proponent:

Cameron Ward - City of Winnipeg

Mailing address:

106-1155 Pacific Avenue

City/Town:

Winnipeg

Province/Territory:

Manitoba

Postal Code:

R3E 3P1

Tel. No. :

204-986-3508

Fax No.:

Email:

cward@winnipeg.ca

Select additional contact:
Contractor/Agency/Consultant *(if applicable)*:

Stantec Consulting
Angèle Watrin Prodaehl

Mailing address:

500-311 Portage Avenue

City/Town:

Winnipeg

Province/Territory:

Manitoba

Postal Code:

R3B 2B9

Tel. No. :

204-928-7627

Fax No.:

204-453-9012

Email:

angele.watrin-prodaehl@stantec.com

Is the Proponent the main/primary contact? ○ Yes ○ No

If no, please enter information for the primary contact or any additional contact.

Primary contact for fish related enquiries should be angele.watrin-prodaehl@stantec.com

B) Description of Project

If your project has a title, please provide it.

Dublin Avenue Bridge Replacement over Omand's Creek

Is the project in response to an emergency circumstance*? ○ Yes ◉ No

Does your project involve work in water? ◉ Yes ○ No

If yes, is the work below the High Water Mark*? ◉ Yes ○ No

What are you planning to do? Briefly describe all project components you are proposing in or near water.

The existing bridge is in disrepair, and the sediment is contaminated with metals and PAH. Removal of the contaminated soil from the Site, and replacement of the bridge are necessary.

How are you planning to do it? Briefly describe the construction materials, methods and equipment that you plan to use.

The proposed in-water work will occur outside the Restricted Activity Timing Windows for southern Manitoba (April 1 – June 30) to avoid potential spring and summer spawning. The proposed works will remove the existing bridge and install a new single-span concrete slab bridge. The outer bridge spans will be 5.5 m long and the central channel span will be 8.0 m wide, for a total bridge length of 19.0 m. The instream work associated with the bridge replacement will be completed in winter under frozen conditions from January to March 2020. Instream work will include removal of impacted soils/sediment and regrading of the creek bed and banks with addition of riprap over the impacted area.

Include a site plan (figure/drawing) showing all project components in and near water.

Are details attached? ◉ Yes ○ No

Identify which work categories apply to your project.

- ☐ Aquaculture Operations
- ☒ Aquatic Vegetation Removal
- ☐ Beaches
- ☐ Berms
- ☐ Blasting / Explosives
- ☐ Boat Houses
- ☐ Boat Launches / Ramps
- ☐ Breakwaters
- ☒ Bridges
- ☐ Cable Crossings
- ☐ Causeways
- ☐ Culverts
- ☐ Dams
- ☒ Dewatering / Pumping
- ☐ Docks
- ☒ Dredging / Excavation
- ☐ Dykes
- ☐ Fishways / Ladders
- ☐ Flow Modification (hydro)
- ☐ Groundwater Extraction
- ☐ Log Handling / Dumps
- ☐ Log Removal
- ☐ Moorings
- ☐ Open Water Disposal
- ☐ Piers
- ☒ Riparian Vegetation Removal
- ☐ Seismic Work
- ☐ Shoreline Protection
- ☐ Stormwater Management Facilities
- ☐ Surface Water Taking
- ☐ Tailings Impoundment Areas
- ☐ Temporary Structures
- ☐ Turbines
- ☐ Water Control Structures
- ☐ Water Intakes / Fish Screens
- ☐ Water Outfalls
- ☐ Watercourse Realignment
- ☐ Weirs
- ☐ Wharves
- ☐ Wind Power Structures

☐ Groynes
☒ Habitat Restoration
☐ Ice Bridges
☒ Other Please Specify: Removal of contaminated soil and repl

Was your project submitted for review to another federal or provincial department or agency? ○ Yes ◉ No

If yes, indicate to whom and associated file number(s).

C) Location of the Project

Coordinates of the proposed project Latitude [ ] N Longitude [ ] W

OR UTM zone 14U ; 629572.85 Easting

5530327.89 Northing

Include a map clearly indicating the location of the project as well as surrounding features.

Name of Nearest Community (City, Town, Village): Dublin Avenue, between Border and St. James St. , Winnipeg

Municipality, District, Township, County, Province: Manitoba

Name of watershed (if applicable): Assiniboine River Watershed

Name of watercourse(s) or waterbody(ies) near the proposed project: Ormand's Creek

Provide detailed directions to access the project site:

The project is located between Border Street and St. James Street on Dublin Avenue in Winnipeg, MB. The project will be accessed through municipal roadways.

D) Description of the Aquatic Environment

Identify the predominant type of aquatic habitat where the project will take place.

○ Estuary (Estuarine)
○ Lake (Lacustrine)
○ On the bank/shore at the interface between land and water (Riparian)
◉ River or stream (Riverine)
○ Salt water (Marine)
○ Wetlands (Palustrine)

Provide a detailed description of biological and physical characteristics of the proposed project site.

The approximate channel width upstream of the proposed bridge replacement is approximately 4.0 m, and downstream the channel width is approximately 10.0 m. The Site has gentle-sloped banks (5-15 degrees) with the exception of a few areas upstream of the bridge, on the outsides of creek bends, where the bank slopes were 40-90 degrees. The banks are composed primarily of organic and fine-sized material and both upstream and downstream banks were stable. Instream vegetation and floating algae were abundant in

slower portions of the creek. The riparian area consists predominantly of willow, cattails and thistle, with grasses and shrubs also present. Omand's Creek water depths ranged from 0.1 m to 0.8 m at the time of the site visit, with substrate composition consisting predominantly of fines with lesser amounts of coarser material present such as cobble, small gravel, and a few boulders. The banks are covered with riprap downstream of the bridge Project. Omand's Creek supports spring and summer spawning fish from the Assiniboine River as well as moderate to good rearing habitat for fish. Migration habitat quality would depend on water levels and time of year. Omand's Creek within the assessment area is anticipated to freeze to the bottom during the winter. Overwintering of fish likely occurs downstream in the Assiniboine River.
Previous surveys in Omand's Creek identified northern pike (Esox lucius) white sucker (Catostomus commersoni), brook stickleback (Culaea inconstans), and fathead minnow (Pimephales promelas) (Penner, 2006). None of the aquatic species identified in the reviewed literature are listed by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC), under the Species at Risk Act (Government of Canada 2017), or by the Manitoba Conservation Data Centre (Government of Manitoba 2018).

The soil/sediment at the Site is impacted with metals and polyaromatic hydrocarbons. Refer to photos of the site.

Include representative photos of affected area (including upstream and downstream area) and clearly identify the location of the project.

E) Potential Effects of the Proposed Project

Have you reviewed the Pathways of Effects (PoE) diagrams (http://www.dfo-mpo.gc.ca/pnw-ppe/pathways-sequences/index-eng.html) that describe the type of cause-effect relationships that apply to your project?

◉ Yes ○ No

If yes, select the PoEs that apply to your project.

- ☒ Addition or removal of aquatic vegetation
- ☐ Change in timing, duration and frequency of flow
- ☐ Cleaning or maintenance of bridges or other structures
- ☐ Dredging
- ☒ Excavation
- ☒ Fish passage issues
- ☒ Grading
- ☐ Marine seismic surveys
- ☒ Organic debris management
- ☐ Placement of marine finfish aquaculture site
- ☒ Placement of material or structures in water
- ☐ Riparian Planting
- ☐ Streamside livestock grazing
- ☒ Structure removal
- ☐ Use of explosives
- ☒ Use of industrial equipment
- ☒ Vegetation Clearing
- ☐ Wastewater management
- ☐ Water extraction

Will there be changes (i.e., alteration) in the fish habitat*? ◉ Yes ○ No ○ Unknown

If yes, provide description.

Replacement fill will extend beyond the footprint of the existing bridge structure and the stream bed will be regraded. The footprint of riprap material will extend beyond the footprint of the existing bridge structure, and the overhanging vegetation on the banks will be replaced with riprap. Revegetation of banks where feasible will be conducted above the high water mark in the spring/summer.

Will the fish habitat alteration be permanent*? ◉ Yes ○ No ○ Unknown

Is there likely to be destruction or loss of habitat used by fish? ○ Yes ○ No ◉ Unknown

What is the footprint (area in square meters) of your project that will take place below the high water mark*?

Contaminated soil will be excavated and removed from 4,406 m2 of creek bed and banks, with regrading down 0.3 m. That same area will be covered with clean fill and rip rap following soil removal.

Is your project likely to change water flows or water levels? ○ Yes ◉ No ○ Unknown

If your project includes withdrawing water, provide source, volume, rate and duration.

If your project includes water control structure, provide the % of flow reduction.

If your project includes discharge of water, provide source, volume and rate.

Will your project cause death of fish? ○ Yes ◉ No ○ Unknown

If yes, how many fish will be killed (for multi-year project, provide average)? What species and lifestages?

Are there aquatic species at risk (http://www.sararegistry.gc.ca/species/aquatic_e.cfm) present? If yes, which ones?

None of the aquatic species identified in the reviewed literature are listed by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC), under the Species at Risk Act (Government of Canada 2017), or by the Manitoba Conservation Data Centre (Government of Manitoba 2018).

What is the time frame of your project?

The construction will start on January /2020 and end by March /2020

If applicable, the operation will start on road operation March /2020 and end by

If applicable, provide schedule for the maintenance

Not applicable

If applicable, provide schedule for decommissioning

Not applicable

Are there additional effects to fish and fish habitat that will happen outside of the time periods identified above? ○ Yes ◉ No

(If yes, provide details)

Have you considered and incorporated all options for redesigning and relocating your project to avoid negative effects to fish and fish habitat?

◉ Yes ○ No

If yes, describe.

The bridge replacement is aligned with existing roadways within the City of Winnipeg and fish habitat at this location has been previously altered by the existing bridge over Omand's Creek. Changing the location of the bridge replacement would affect a portion of the creek not already altered. The contaminated soil must also be removed, therefore the project location cannot be relocated.

Have you consulted DFO's Measures to Avoid Harm to Fish and Fish Habitat (http://www.dfo-mpo.gc.ca/pnw-ppe/measures-mesures/index-eng.html) to determine which measures apply to your project?

◉ Yes ○ No

Will you be incorporating applicable measures into your project? ◉ Yes ○ No

If yes, identify which ones. If No, identify which ones and provide reasons.

Timing, avoiding work instream (where possible), isolation of instream work, sediment and erosion control measures (summarized in a plan/document), shoreline and stabilization and addition of riprap, operation of machinery, containment and spill management.

Have you considered and incorporated additional best practices and mitigation measures recommended in relevant guidelines to avoid negative effects to fish and fish habitat?

○ No ◉ Yes

If Yes, include a list of the guidelines being used to avoid negative effects to fish and fish habitat.

City of Winnipeg Best Management Practices Handbook for Activities In and Around the City's Waterways and Watercourses

Are there any relevant best practices or mitigation measures that you are unable to incorporate? ○ Yes ◉ No

(If yes, identify which ones.)

Can you follow appropriate Timing Windows (http://www.dfo-mpo.gc.ca/pnw-ppe/timing-periodes/index-eng.html) for all your project activities below the High Water Mark*?

◉ Yes ○ No

(If no, provide explanations.)

What residual effects to fish and fish habitat do you foresee after taking into account the avoidance and mitigation measures described above?

The new fill and riprap will be placed on top of the river bed and banks, which will permanently alter 4,406 square metres of the existing fish habitat. The removal of contaminated soils will have a positive residual effect to fish and fish habitat by eliminating this source of contamination. Due to the effective implementation of mitigation measures, residual effects to fish and fish habitat are anticipated to be negligible and not expected to affect fisheries in Omand's Creek or the Assiniboine River.

F) Signature

I, Angele Watrin Prodaehl (print name) certify that the information given on this form is to the best of my knowledge, correct and completed.

for

Signature

06/10/2019
Date

Information about the above-noted proposed work or undertaking is collected by DFO under the authority of the *Fisheries Act* for the purpose of administering the fisheries protection provisions of the *Fisheries Act*. Personal information will be protected under the provisions of the *Privacy Act* and will be stored in the Personal Information Bank DFO-PPU-680. Under the *Privacy Act*, Individuals have a right to, and on request shall be given access to any personal information about them contained in a personal information bank. Instructions for obtaining personal information are contained in the Government of Canada's Info Source publications available at www.infosource.gc.ca or in Government of Canada offices. Information other than "personal" information may be accessible or protected as required by the provision of the *Access to Information Act*.

**All definitions are provided in Section G of the Guidance on Submitting a Request for Review*

Guidance on Submitting a Request for Review

This document explains the requirements for a Request for Review by DFO under the fisheries protection provisions of the *Fisheries Act*. To determine whether you should request a review, follow the steps for proponent Self-Assessment on DFO's Projects Near Water webpage (http://www.dfo-mpo.gc.ca/pnw-ppe/index-eng.html).

Incomplete Requests for Review will be returned to the applicant without review by DFO. All information requested must be provided. If you attach documents to your application with additional information, you must still provide appropriate summaries in the spaces provided on the application document or your application will be considered incomplete.

Section A: Contact Information

Provide the full legal name of the proponent and primary mailing address for the proponent. When the proponent is a company, identify the full legal registered name of the company.

If applicable, also provide the contact information of the duly authorized representative of the proponent. Please note that a copy of correspondence to Contractor/Agency/Consultant will also be sent to the Proponent.

Section B: Description of Project

This information is meant to provide background about the proposed project. All components of the proposed project in or near water, must be described.

Proponents should provide information about all appropriate phases of the project, i.e., the construction, operation, maintenance and closure phases for the proposed project.

All details about the construction methods to be used, associated infrastructure, permanent and temporary structures, building materials to be used, machinery and equipment to be used must also be provided. For example, the construction of **permanent structures** may require the construction of temporary structures such as temporary dikes, in conjunction with other associated activities like the withdrawal of water, land clearing, excavation, grading, infilling, blasting, dredging, installing structures, draining or removing debris from water. Similarly, the equipment and materials to be used may include hand tools, backhoes, gravel, blocks or armor stone (provide the average diameter), concrete (indicate if pre-cast or poured in-water), steel beams or wood.

When physical structures in or near water are proposed, provide the plan and specifications of those works which would require a review.

Section C: Location of the Project

The purpose for this information is to describe and illustrate the location of the proposed project, and to provide geographical and spatial context. The information should also facilitate an understanding of how the project will be situated in relation to existing structures.

The details to be provided must include:

- Coordinates of the project (e.g., Latitude and Longitude or Universal Transverse Mercator Grid coordinates);
- A map(s), site plan, or diagrams indicating the high water mark and the location, size and nature of proposed and existing structures (e.g., floating or fixed), landmarks and proposed activities. In a marine setting, it may be helpful to depict the approximate location of the proposed development on a nautical chart or showing the relation of the site to sea marks or other navigational aids. These plans, maps or diagrams should be at an appropriate scale to help determine the relative size of the proposed structures and activities, the proximity to the watercourse or waterbody and the distance from existing structures;
- The community nearest to the location of the proposal as means to provide a general reference point. When possible, proponents should use geographical names recognized by the Geographical Names Board of Canada (http://www.nrcan.gc.ca/earth-sciences/geography-boundary/geographical-name/11680).
- If available, provide aerial photographs or satellite imagery of the water source(s) and waterbody(ies);
- Names of the watershed(s), water source(s) and/or waterbody(ies) likely to be affected by the proposal; and
- Brief directions to access the proposed project site.

Section D: Description of the Aquatic Environment

Proponents must describe the environmental context and aquatic resources present at the proposed site. The information must identify the current state of the fish and fish habitat prior to the carrying on of the project.

It is important to include information about the fish species present, the biological, chemical, physical features present (habitat characteristics), and the fish life-cycle functions (fish characteristics).

The spatial scope for assessing fish and fish habitat should encompass the direct physical footprint of the project, and the upstream and downstream areas affected.

As an example, the following is a non-exhaustive and non-prescriptive list of some common attributes which may characterize the aquatic environment:

- Type of water source or watercourse (groundwater, river, lake, marine, estuary, etc.);
- Characteristics of the water source or waterbody could include:
  - Substrate characterization - describe the types of substrate (e.g., bedrock, boulder, cobble, gravel etc.), identify the predominant substrate type (e.g., 80% cobble, 20% gravel etc.) and provide maps of the substrate;
  - Aquatic and riparian vegetation characterization - identify the prevalent types of vegetation (e.g. rooted, submerged, emergent, etc.), identify the relative abundance of the vegetation (e.g., 10% cattails, 80% grass, 10% sedge) , indicate the predominant vegetation (e.g., by species or types) and identify the vegetation densities (e.g., type of vegetation/ area);
  - Flow characterization - specify if the flow is controlled or if it is natural, identify if the flow is permanent or intermittent, identify the current and tide (marine environment) etc.;
  - Physical waterbody characterization - identify the average depth of water for water bodies, identify bathymetry of water bodies, provide bathymetric maps where available, channel width (determine the width of the channel from the high water mark), slope ;
  - Water quality characterization - (e.g., annual or average pH, salinity, alkalinity, total dissolved solids, turbidity, temperature etc.);
  - Biological water quality characterization - (e.g., benthic macro-invertebrates, zooplankton, phytoplankton, etc.)
- Fish species characterization - identify the fish species (including molluscs, crustaceans, etc.) known or suspected to be in the area, predator prey relationships etc. Identify what source of information was used and to determine the presence of fish in that area; and
- Estimate the fish abundance - estimate the number of fish present, estimate the year class for each species etc.

There are many different methods and attributes available to characterize fish and fish habitat. Proponents must describe all sources of information used, all fish and environment sampling techniques used, all modelling techniques used and all other approaches used to define the fish and fish habitat. Proponents are encouraged to use recognized fisheries inventory methods such as those approved by DFO or provinces and territories, or scientifically defensible methodologies and techniques whenever possible.

Whenever possible, proponents should support descriptions of the aquatic environment with the use of detailed drawings, such as plans or maps and photographs of the habitat features. In an offshore marine setting, photos may not be useful to depict the proposed development site. Instead describe and/or sketch the specific features of the sea floor which may include the presence of submarine features such as canyons, cliffs, caverns, etc.

Section E: Potential Effects of the Proposed Project

The objective of this section is to identify all anticipated effects on fish and fish habitat likely to be caused by the project. Proponents should consider all mitigation or avoidance techniques.

The description must include qualitative and/or quantitative information about the predicted/potential effects to fish species and fish habitat. Some examples of likely effects may include mortality to fish, changes to the life stages of fish affected, area of habitat loss, change to flow, changes to habitat function, reduction in prey availability etc.

The spatial scope of the aquatic effects assessment would include the direct physical "footprint" of the proposed project, and any areas indirectly affected, such as downstream or upstream areas. This may also include areas in or on the water, on the shoreline, coast or bank(s) (i.e., in the riparian zone).

The assessment must include the following attributes:

- Identification of all fish species affected by the proposed project ;
- Identification of the type of fish habitat affected (e.g., spawning habitat - gravel and cobble, feeding and rearing areas - side channel slough, small tributaries, etc.), estimate of the affected area (e.g., square meters or hectares);
- Of the affected fish, identify the life stages affected (e.g., juvenile, yearling, adult etc.);
- Description of the effect (e.g., mortality to fish from entrapment, delayed migration of spawning adults, reduction in prey availability, etc.)
- Probability of the effect - this is the likelihood of the effect occurring (e.g., probability of fish strike from turbines for specific fish sizes, probability of sediment plume within a distance from source, etc., or qualitative assessment: low, medium, high)
- Magnitude of the effect - this is the intensity or severity of the effect (e.g., total number of fish affected, or qualitatively assessment: low, medium, high).
- Geographic extent of the effect - this is the spatial range of the effect (e.g., localized to 100m from the work, channel reach or lake region, entire watershed etc.); and
- Duration of the effect - this is the temporal period for which the effect will persist (e.g., duration of delay to fish migration in hours, days, months or years).

The information to be provided must also describe the methods and techniques used to conduct the assessment. As much as possible, methods and techniques used should be scientifically defensible.

The schedule should, at minimum, identify the proposed start and end dates for carrying out each proposed activity, and where applicable, identify the respective phase of the proposal; i.e., the construction, operation, maintenance and closure phases. In some cases, in order to provide additional context, it may be relevant to identify other information such as the expected life span of permanent and temporary structures.

Proponents must provide comprehensive information about all best available measures and standards that are proposed to avoid or mitigate potential serious harm.

Residual serious harm to fish is any serious harm to fish remaining after the consideration of the application of proposed measures or standards to avoid or mitigate serious harm.

It is important to clearly describe and quantify residual serious harm because DFO will use this information as part of its decision making on whether an authorization is required under subsection 35(2)(*b*) of the *Fisheries Act*.

Section F: Submission and Signature

The proponent must sign the application. A signed original of the Request for Review must be provided to the regional DFO office (http://www.dfo-mpo.gc.ca/pnw-ppe/contact-eng.html), even if an electronic copy was sent by email. Should the review of your project indicate that residual serious harm to fish is likely, the information provided in the Request for Review document can be referred to in the subsequent Application for an Authorization under Paragraph 35(2)(*b*) of the *Fisheries Act*.

Section G: Definitions

Emergency circumstance: If your project must be conducted in response to an emergency, you may apply for an Emergency Authorization. The emergency situations are:

- The project is required as a matter of national security
- The project is being conducted in response to a national emergency where special temporary measures are being taken under the federal *Emergencies Act*

- The project is required to address an emergency that poses a risk to public health or safety or to the environment or property.

Fish habitat: Means spawning grounds and any other areas, including nursery, rearing, food supply and migration areas, on which fish depend directly or indirectly in order to carry out their life processes.

High Water Mark: The usual or average level to which a body of water rises at its highest point and remains for sufficient time so as to leave a mark on the land.

Permanent alteration to fish habitat: An alteration of fish habitat of a special scale and a duration that limits or diminishes the ability of fish to use as spawning grounds for nursery or rearing, or as food supply, or as a migration corridor in order to carry out one or more of their life processes.